

The Queensland Naturalist.

THE ORGAN OF THE FIELD NATURALISTS' CLUB
AND ITS BRANCHES.

VOL. III.

JULY, 1921.

No. 1.

FOREWORD.

At this stage in the history of the Queensland Field Naturalists' Club and its journal, it seems advisable to comment briefly on recent developments and the outlook for the future. The point is that circumstances have arisen which make it likely that the scope of the Club will be broadened and the *Naturalist* enlarged or otherwise altered.

These circumstances have to do with a proposal to amalgamate the Field Naturalists' Club with the Gould League of Bird-Lovers. It is not easy to say from which body the proposal emanated, for the personnels of both are largely identical; indeed, this was one of the factors that prompted the suggestion for alliance. Other considerations were the possibility that by amalgamation the aims of both bodies could be more efficiently and economically carried out, a larger field of operations covered (including the more systematic enrolment of country members), central rooms obtained, and a greater influence secured with the Governments and the public. Moreover, it was thought that, with a body directly representative of the whole State, the *Queensland Naturalist* could be enlarged and made an even more vital factor than it is at present in the study of natural history in this great, bountifully-endowed unit of the Commonwealth.

Having given close consideration to these points, a combined meeting of the executives of both bodies agreed to the following resolution: "That the Queensland Field Naturalists' Club and the Queensland Gould League of Bird Lovers amalgamate into one body, to be called the Queensland Natural History Society, all funds and assets of the existing bodies to be pooled; this action to be subject to a ballot being taken of all adult members of both bodies prior to 30th June, 1921; a seventy-five per cent. majority to decide the issue."

The ballot has been taken, and the result will be reported at an early date.

In the meantime, it will not be out of place to suggest that the Field Naturalists' Club has reason to congratulate itself on work accomplished. Much of this has been given to the world through the medium of the *Naturalist*, and the striking manner in which the list of exchanges has swelled, together with the many more direct requests that have been received from abroad for copies of the journal, have carried conviction as to the worth of the work being done.

Further evidence on the point came from Professor E. H. Wilson, of the Arnold Arboretum, Harvard University (U.S.A.), who recently carried out forestry inspection in Queensland. Speaking to a newspaper representative, Professor Wilson described the Queensland Field Naturalists' Club as "easily the most active body of its kind" he had met on his travels, particularly in relation to botany and birds. His sense of its worth, he said, was best shown in the fact that he had become a life member of the Club. Referring to individual members, the visitor paid a tribute to the work being done by Mr. E. W. Bick as Director of the Botanic Gardens, and also warmly commended the Government Botanist (Mr. C. T. White) and the Assistant Government Botanist (Mr. W. D. Francis). He said he had known Mr. White by repute, and he had "measured up" beyond expectations. Queensland should be proud of the fact that it had an Australian-born Government Botanist, and that one a young worker who, in Professor Wilson's opinion, bade fair to become one of the foremost dendrologists of his time in the world.—A.H.C.

PROCEEDINGS.

April to June, 1921.

April 18.—Dr. A. Jefferis Turner, F.E.S., on "The Lepidoptera of Charleville and the Interior."*

May 16.—National Parks Public Meeting. The Chair was occupied by the Patron of the Club, His Excellency the Governor, Sir Matthew Nathan, whose party included Sir Thomas Robinson (ex-Agent General for Queensland in London) and Lady Robinson. The Governor, responding to a welcome, extended him on behalf of the Club by the President, said it seemed to him a great thing for

*See pp. 17-22.

the State to have set apart tracts of country as sanctuaries for the indigenous flora and fauna. Illustrated lectures on features of the National Parks of the Macpherson and Bunya Ranges were delivered by Professor H. C. Richards, D.Sc., (geology), Messrs. C. T. White, F.L.S. (botany), A. H. Chisholm, R.A.O.U. (ornithology), and H. A. Longman, F.L.S. (zoology). The lecturers were thanked on the motion of the Governor, who was also accorded a vote of thanks for his attendance and interest in the subject.

May 23.—Monthly Meeting. Feature, Lecture on "The Microscope; its Construction and Manipulation," by Mr. Frank L. Baker (W. Watson and Sons, Ltd.). Mr. Baker spoke of the "growth" of the microscope and its great value in many fields of science. He detailed also the essentials in a microscope and exhibited what he regarded as the most desirable modern instrument, Watson's "Service" microscope. This, he said, had been produced from specifications drawn up by a committee of the British Science Guild.

Professor E. H. Wilson, of Harvard University (U.S.A.) was welcomed to this meeting, and enrolled as a member of the Club. A fine lot of lantern slides (chiefly scenic views) was screened by Mr. J. E. Young.

June 1.—Illustrated lecture by Captain S. A. White, C.M.B.O.U. (South Australia), on "The Economic Value of our Native Birds." Captain White, who was in Queensland on research work for the Forestry Dept., made a strong case for the better protection of various birds, and especially mentioned the Crested Shrike-Tit (*Falcunculus*) as an enemy of the destructive Cedar Twig Borer. The Director of Forests (Mr. E. H. F. Swain), the Under Secretary for Agriculture (Mr. E. G. Scriven), and the Director of the Perth Zoological Gardens (Mr. A. E. Le Souef) were welcomed to this meeting.

June 3.—Excursion to Woogaroo Scrub, Goodna.

June 20.—Illustrated lecture by Miss Freda Bage (ex-President) on "Tasmania and its National Park." Miss Bage conveyed a good deal of interesting information, and a general discussion followed. Special lantern slides were shown by Mr. R. L. Higgins.



TRANSACTIONS.

BIRDS OF THE BAY.

(Notes taken during a three months' cruise of
Moreton Bay.)

By (Mrs.) L. M. MAYO.

The Whistling Eagles (*Haliastur sphenurus*) were very plentiful on Myora Beach. Every afternoon when the tide was out half a dozen of these birds would be circling overhead, to the great uneasiness of the Herons (White-fronted and Blue Reef) on the beach, or rather sand flats—the tide goes out nearly a mile in places from the shore.

Twice I saw Eagles attack Herons in the air. As the Eagles narrowed the circle of their flight, all the Herons would rise, flapping aimlessly and screaming, then try to escape by doubling in the air (as a hare does on land) with their legs hanging and necks outstretched. They had a very lively fear of the Eagles, and so long as those birds were overhead they watched them.

One Wedge-tailed Eagle kept to the hills by the shore.

What I took to be a pair (their plumage was similar in every way, but one bird was a good deal larger than the other) of White-bellied Sea Eagles were constant on the beach, hunting for fish; and after a meal in the evening they used to make a tremendous "quacking" noise, like any geese. Until I actually saw the birds as they "sang their even-song," I could not believe they were responsible for the noise.

A pair of very beautiful red Eagles, with white heads and chests, also hunted round Myora pool.

During March the birds on the sand flats comprised Pelicans, Black Swans, Curlews, Whimbrels, Godwits, Sacred Ibis, Cormorants (White-breasted and small Black), Dottrels (Red-capped, Black-fronted, and Black-banded). One lovely pair of White Egrets, still wearing their plumes, played round the fresh-water pool every day. We noted also Pied Oyster-catchers, Wild Ducks, and Kingfishers (*H. sanctus* and *H. macleayi*).

The Sacred Kingfisher was a very friendly chap, and used to fly out to the boat and come under the awning to have a look at me. He also enjoyed perching on the bobstay and twanging it with his bill—I think the vibration he caused must have tickled his toes nicely.

Watching a flock of Herons rise one day, I noticed that the foot of one of the birds was firmly enclosed in a bivalve. Needless to say, the Heron did not “trim” itself, but flew off with its legs hanging down, and carried the bivalve out of sight.

At night many hundreds of birds—Crows, Herons, Ibis, and Cormorants—roosted in big mangrove trees about 50 yards from the shore, and the commotion and noise as they got ready to roost beggared description. The “Shags” always waited along the edge of the water until the other birds settled; then they took up positions on the outer branches of the trees, their breasts looking like big white flowers in the dusk. We routed the birds out occasionally, just for the joy of seeing them all circling in the air and hearing their protesting cries as they got back to bed.

The White-cheeked Honeyeaters (*Meliornis sericea*) were flocking on the Southern end of Stradbroke Island in February, and were as common and noisy as Sparrows. In March they had all gone, and a little grey Honeyeater* with a dusky head, and a bright song had taken their place.

I think this has been a wonderful season for birds, and they have seemed much tamer than usual. Who can believe it is the middle of winter while they hear and see every day (as I do in my little backyard) Rufous Whistlers, White-naped Honey-eaters (“skits” the boys call them) White-shafted Fly-catchers, Wagtails, and Peewees?

And Java Doves are building at the extremest tip of the silky oak. Much chance they have of rearing their brood at that altitude unless they put a decent “floor” to their nests!

A pair of Little Cuckoo Shrikes are pulling and eating the dead leaves from the fig tree—and all day long “the little birds do sing!”

*Probably *Stigmatopora ocellaris*.—EDS.

QUEENSLAND GEMSTONES IN THE PRINCE'S CASKET.

By B. DUNSTAN.

Chief Government Geologist.

(With two plates).

Queensland produces a wonderful variety of metallic and non-metallic minerals of economic importance. Perhaps no other country in the world is comparable with her in this respect. Amongst these minerals are numbers of gemstones of great beauty and rarity, and it has been the endeavour, in making up a "Prince's Collection," to illustrate what can be produced in the State in the way of stones for gem and ornamental purposes.

The following account of the stones of the casket does not embrace all that Queensland can produce, but a list of those not included in the collection is given at the end. The descriptions are not in numerical order, but according to mineral species and varieties:—

A. THE CORUNDUM VARIETIES.

(Nos. 1, 2, 3.) The Oriental peridot, or yellowish-green sapphire, occurs in all parts of the Anakie sapphire field. It varies much in colour and shade, and merges into Oriental olivine, the tints varying between the standard yellowish-green and brownish-green. The stones are more attractive in daylight than in artificial light, particularly if the light is yellowish; at night they are of a pink colour, this rare feature suggesting the name of Alexandrite sapphire. The stones numbered 2 and 3 have this peculiar optical effect, and are decidedly pink at night time. They are from Mr. Hunt's claim at Rubyvale, No. 1 stone coming from Mr. Newsome's claim in the same locality.

(Nos. 23, 24, and 25.) The three Oriental emeralds, or emerald green sapphires, are usually deep in tint, but somewhat lighter shades are occasionally found, which vary between grass-green and a pale emerald-green, although none have been found having the brightness of colour of the true emerald. Its dichroic property gives it a light and dark green effect, according to the direction in which in the rough it is viewed, and when the stones are faceted this effect is retained. The pale bluish-green sapphire—Oriental aquamarine (No. 9)—is a rare stone, and generally very clear, and when correctly faceted makes a gem much more lustrous than the ordinary aquamarine.

(Nos. 7, 8.) The yellow sapphire, or Oriental topaz, is the queen of all Anakie stones, and perhaps the rarest; and amongst its varieties the orange yellow is the most wonderful and beautiful. The yellow stone in the collection was found twenty years ago at the Reward Claim, on Retreat Creek, near Rubyvale, where the first discovery of sapphires was made many years previously, the stone being found in the centre of a rough piece of corundum which was thrown away as worthless and afterwards picked up and broken in two, the yellow crystal showing in the centre. The deep yellow stone was obtained at Iguana Flat, close to Rubyvale. The colour varies from a light canary (which is rare) to honey-yellow and lemon-yellow, all such tints producing nice effects when the crystal is not marked by cloudiness or silkiness. All the varieties of yellow sapphire are good stones for day wear, but some tints are very effective in artificial light, and with diamonds make very brilliant settings.

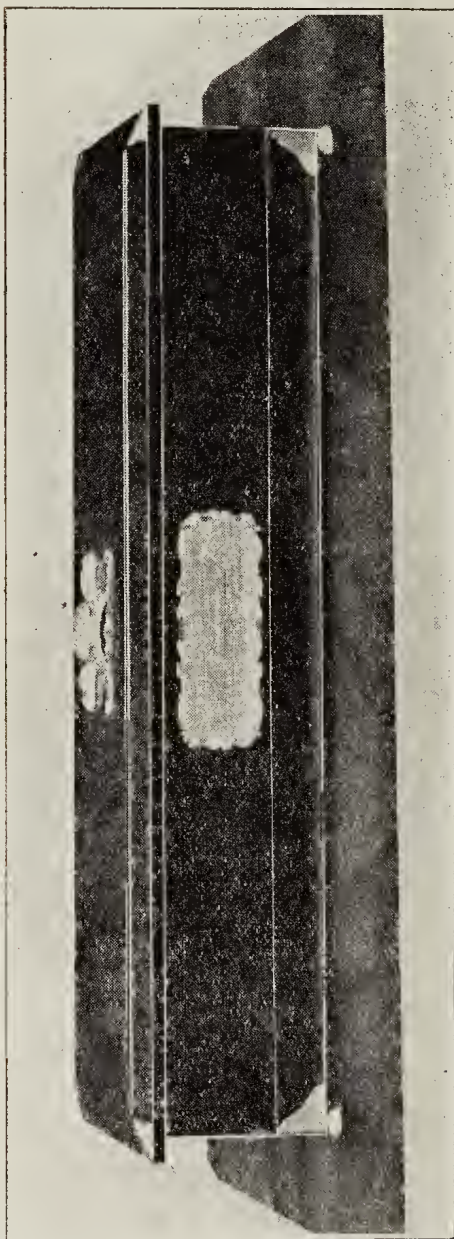
(No. 14.) Blue sapphires. Light and dark shades of this variety of sapphire are common, but a characteristic green tint is invariably present, which serves to distinguish the Anakie sapphires from those of any other part of the world. These blues are the "bread and butter" stones of the miners, all others being classed as "fancy stones."

(No. 13.) Parti-coloured sapphires are not so rare as the yellow stones, although much rarer than the blue and green stones. They are very beautiful when skilfully cut by the lapidary, and show quite a number of shades; but at present no very great demand exists for them. The combined colours are blue-green, blue-yellow, yellow-green, and blue-red. The yellow usually forms the centre and sometimes takes the shape of a triangle. Occasionally a pink band is found to encircle a blue stone, and bands of yellow alternate with bands of blue.

B. SILICATES.

(No. 19). Aquamarine, the sea-green variety of beryl, occurs in many of the alluvial deposits in the Chillagoe and Herberton mineral fields. The stone in the collection was cut from a six-sided prismatic crystal, three inches long and over an inch in diameter, the specimen being obtained from the Tate River gravels close to the township of Fisherton, in association with alluvial gold.

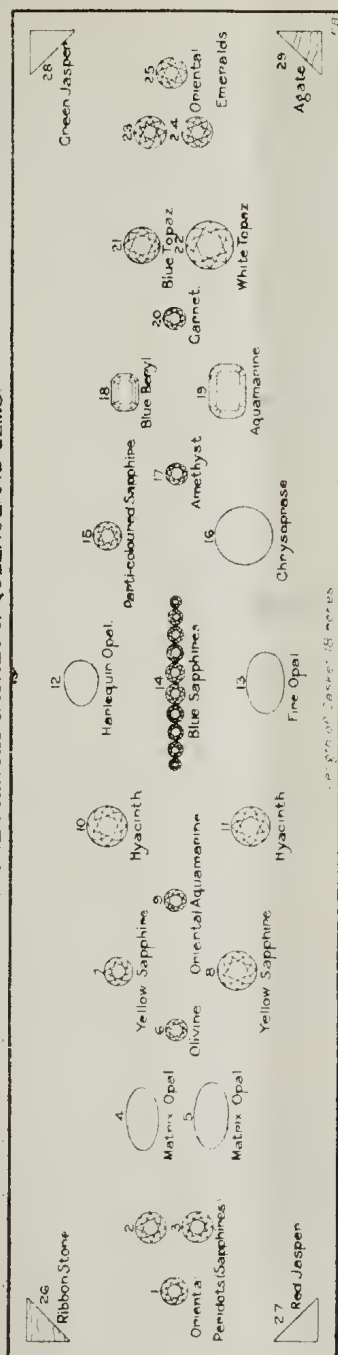
(No. 18). Blue beryl is an uncommon stone in Queensland, and has only been found at Brooklands, near



PRINCE OF WALES' CASKET, PRESENTED BY QUEENSLAND.

The Associations which contributed to the presentation include:—The Brisbane Chamber of Commerce, Queensland Employers' Federation, United Graziers' Association of Queensland, Brisbane Merchants' Association, Queensland Chamber of Commerce, and affiliated organisations. Supplies of gems were from the firms of Messrs. Knowles, Sankey Fraser, and Harris, of Brisbane, and from Messrs. Newsome, Hunt, McIntyre, and Cummings, of Anakie. Most of the stones were cut by Mr. Hyde, some being by Mr. Goerg. The casket and gold mounting were by Mr. Phillips, the wood being Queensland beanwood. On the top of the casket is placed the Prince of Wales feathers, and on the front the names of the above Associations.

DESIGN OF THE PRINCE'S CASKET OF QUEENSLAND GEMS.



Locality Reference.

- | | | |
|-----------------------|-----------------------|---------------------|
| 1, 2, 3. Anakie, C.Q. | 17. Bowen, N.Q. | 24. Anakie, C.Q. |
| 4. Opalton, W.Q. | 18. Fossilbrook, N.Q. | 25. Anakie, C.Q. |
| 5. Mainside, W.Q. | 19. Tate River, N.Q. | 26. Camooweal, W.Q. |
| 6. Toowoomba. | 20. Lowood, S.Q. | 27. Cawarral, C.Q. |
| 7. Anakie, C.Q. | 21. Tate River, N.Q. | 28. Cloncurry, N.Q. |
| 8. Anakie, C.Q. | 22. Stanthorpe, S.Q. | 29. Croydon, N.Q. |
| 9. Anakie, C.Q. | 23. Anakie, C.Q. | |

Fossilbrook, and at the Tate River, both in gravels, the latter being in association with gold. The stone in the collection is from Brooklands, and when picked up was thought to be a piece of waterworn glass. It has the composition of the emerald variety of beryl, and being quite flawless, would be an exceedingly valuable stone were it the fashionable green instead of blue.

(Nos. 10, 11). The hyacinth, or red zircon, commonly occurs with the sapphires on the Anakie fields, although only occasionally are stones found sufficiently decided in colour to make them suitable for gems. The cinnamon-coloured zircon, called jargoon, is also common with the sapphires, and the white colourless zircon is occasionally found. Some of the bright red hyacinths are very beautiful when faceted, and it is difficult to understand why this stone should be subservient to the sapphires for jewellery purposes. At Mungella, near Mackay, and other places, the zircon is very common in the form of very small rounded stones in a river gravel, and perhaps hundredweights could be obtained there very easily, although useless for gem-making. The large hyacinth in the collection was found 20 years ago on the Reward Claim at Retreat Creek, Anakie, and is portion of a large piece which was cut into two gems. The other half was used experimentally in reducing the colour by heating to bright redness, but the heat was too great, and the colour was entirely destroyed. When gently heated the hyacinth will become lighter in colour, and when cold will gradually return to its original tint, while a little greater heat will further lighten it and permanently remove some of the colour. The larger hyacinth in the collection is brighter in summer than in winter, and in very hot weather has a decidedly brighter red colour than in cold weather. The small hyacinth (No. 10) was obtained from Policeman Creek, on the Anakie Field, at a position where now the mining town of Sapphire is situated.

(No. 22). White topaz is a somewhat common mineral throughout Eastern Queensland, more particularly in the sapphire leads at Anakie, in the tin gravels at Stanthorpe, and in some of the tin and wolfram lodes on the Herberton and Chillagoe mineral fields. The stone is usually colourless, only rarely having a yellowish tint, but very clear stones are rather uncommon. Occasionally a specimen is found which will cut a very white gem, free from any mistiness or cloudiness, and then it approaches

the diamond in lustre. The stone in the collection is from Stanthorpe.

(No. 21). The blue topaz in the collection was obtained from the Tate River tin mines at Fisherton, in the Chillagoe District. The specimen is typical of those occurring in the gravels with the white topaz, but, while very large waterworn pebbles and crystals are not uncommon, blue stones of a decided colour are rare. The blue topaz also occurs in the tin gravels at Stanthorpe, and occasionally in the sapphire wash at Anakie, in association with colourless topaz. Yellow topaz has not been found in Queensland.

(No. 20). Garnets of a brownish red colour are to be found in numerous localities on the gold, tin, and sapphire fields, and also in many places unaccompanied by any of these minerals. At Jordan Creek, on the Russell goldfield, near Cairns, garnets of several shades of colour are to be observed associated with rubies and other corundum varieties, and deep red garnets occur at Anakie, while at Lowood, an agricultural area near Ipswich, similar stones are found on the ploughed fields after rain. A recent discovery of this stone has been reported from Noosa, on the coast. The specimen in the collection comes from Lowood. Essonite, the brown garnet, and grossularite, the green garnet, are found in the garnet rock masses about Chillagoe, but stones suitable for gems are very rare. At the Ulam marble quarries, between Rockhampton and Gladstone, exquisitely beautiful green garnets are observed in white marble, but they are very minute.

(No. 6). Olivine. The specimen in the casket is from Toowoomba, where there is an area of basalt containing large quantities of this mineral, although pieces large and clear enough for cutting are rare. The colour is usually a light greenish yellow, and rarely a decided grass green.

C. SILICA VARIETIES.

(No. 17). Amethyst, the purple variety of rock crystal, is a common stone in the State, although seldom occurring sufficiently clear and deep in colour to be considered a gemstone. This specimen is from the Don River, near the coastal town of Bowen, and the good effect produced by cutting it into a gem shows that a possibility exists of obtaining material from this locality sufficiently good for gem purposes.

(Nos. 12, 13) Opals occur in Western Queensland over a very large area of artesian water-bearing country in beds of cretaceous sandstone and other sedimentary rocks, and probably have been produced by the infiltration of heated artesian water carrying silica in solution. The centres of opal-mining are very numerous, and gems of great value have been obtained in localities about Cunnamulla, Thargomindah, Eromanga, Kyabre, Jubdah, Adavale, Opalton, and a host of other places, and developments which have taken place on the various fields show that the deposits of opal—good, bad, and indifferent—are practically inexhaustible. In South-Eastern Queensland the basalts of the McPherson Range and adjacent country are the source of opal occurring under entirely different conditions to those prevailing in Western Districts. Similar volcanic rocks exist about Springsure, in the Central District, the opal occurring in flows of vesicular rhyolite. Specimen No. 12 is a dark harlequin opal from Tinterbar, taken out of decomposed basalt in Morris's claim, and Specimen No. 13, the light-coloured green-pink opal, is from a sandstone at Cunnamulla.

(Nos. 4, 5). Matrix opal is a hard ironstone originally made up of broken fragments, which subsequently have been cemented together with opal. No. 4 specimen is from Opalton, and No. 5 from Mainside, both Western Queensland localities. No doubt Queensland offers great inducements for future mining developments in opal.

(No. 16). Chrysoprase is the apple-green chalcedony found in the shingle of Marlborough Creek, a branch of the Fitzroy River, about Yaamba, some miles above Rockhampton. The specimen in the collection contains a trace of nickel, which is probably the pale green colouring ingredient. Much of the stone found in the shingle has a greenish cloudy colour mixed with a milky chalcedony, but portions have a beautiful soft green colour which take a perfect polish. The source of the mineral is the serpentine country in the neighbourhood.

(No. 26). Ribbonstone is a variety of jasper, usually having two or three shades of colour, varying between white, grey, yellow, brown, and red. It has much the appearance of the grain of some woods, and because of this effect has been called "fossil wood," although it is really of inorganic origin. So far as the Queensland ribbon jasper is concerned, the mineral is probably a

pseudomorphic change from limestone into silica. The specimen in the casket is from Camooweal, on the border of Western Queensland, and was found in a belt of limestone country extending from this locality westerly across the border to beyond Anthony's Lagoon, in the Northern Territory. The stones are collected mostly by travellers passing through this part of Australia, and are fashioned by our lapidaries into sleeve links, brooch stones, and watch-chain pendants. They are very suitable for such purposes in being nicely banded, and very hard; they polish perfectly.

(No. 29). Agates are of common occurrence about the Little River tin fields, near Croydon, and at the Percy River, at Gilberton, on the Etheridge goldfield. They are also found in a number of other places, but only occasionally are the stones, other than from the above localities, of any use for ornamental purposes. The specimen in the collection is from Little River, the deposit from which it was obtained being an immense accumulation of pebbles of all sizes, derived from the disintegration of vesicular basalt, the cavities in the rock being the moulds in which the various coloured bands of chalcedony were deposited to make up the agate structure. Some agates are naturally coloured, but the most useful are those which can be artificially tinted by "pickling" in colouring solutions.

(No. 28). Green jasper is only known to occur at the Great Australian copper mine at Cloncurry, one of the earliest mines opened up on this field. It is found in association with chalcedony, malachite, and azurite, and probably has been formed by the silicification of the malachite. The mineral is very hard and tough, and is attached to a dark matrix, and sections with the dark matrix make very pretty effects when polished for brooch stones and other articles of jewellery.

(No. 27). Red jasper is of common occurrence in the serpentine areas about the Rockhampton district, and is also found in association with ironstone and other mineral deposits. The specimen in the collection is from the old copper mine close to a serpentine area at Mount Warminster, at Cawarral, and probably has been formed as a decomposition product of sulphide ores.

D. OTHER STONES.

Other stones not included in this collection are very numerous, of which the following might be mentioned:—Rose stone or rhodonite (Warwick); cross stone or

stauroilite (Cloncurry); grass stone or sagenite (Stanthorpe); malachite (Chillagoe); cairngorm (Stanthorpe); diamonds (Anakie and Stanthorpe); pink sapphire (Anakie); ruby (Russell goldfield); Oriental amethyst (Russell goldfield); Oriental moonstone and cat's-eye (Anakie).

FOUR NOTABLE NATIVE PLANTS.

By C. T. WHITE, F.L.S., Government Botanist.

A VARIEGATED BOX TREE.

While rambling through some forest country near Brisbane, Mr. J. A. Alder recently came across a beautiful variegated form of the Brisbane Box, or Scrub Box (*Tristania conferta*), the variegation consisting of about half the leaf being of a golden tint in place of the ordinary green colour. I had not seen this condition in the Box before, but it has been recorded for several native plants, among others being the Brown Kurrajong (*Commersonia echinata*), the Cockspur Thorn (*Cudrania javanensis*), the Walking-Stick Palm (*Bacularia monostachya*) and the Coast Hibiscus (*Hibiscus tiliaceus*).

To understand variegation, it may be explained that the cells of plants contain numerous small bodies called plastids, of which three kinds occur. In the exposed parts of plants, such as the leaves and young stems, the plastids are green, and in consequence are termed chloroplasts; they contain chlorophyll, which is the characteristic green colouring matter of plants. In underground parts and deep-seated tissues the plastids are colourless, and receive the name leucoplasts; in petals and often other floral parts the plastids contain various colouring matters, and are hence termed chromoplasts.

These three kinds of plastids are convertible one into the other. The leucoplasts of underground parts, potato tubers for instance, develop chlorophyll when exposed to the light; similarly, the chloroplasts of such plants as the endive and celery are artificially converted into leucoplasts by the gardener; the chloroplasts of green unripe fruits develop into chromoplasts as the fruit ripens; and those of the cells of young leaves may change into chromoplasts, producing the well-known autumn tints.

Variegation in leaves is hence due to the fact that in certain parts, in place of the ordinary green plastids or



Helmholtzia glaberrima.

(After F. M. Bailey in "Comprehensive Catalogue of Queensland Plants.")

[From a photo by A. H. Burbank.]

chloroplasts, either leucoplasts or chromoplasts are developed, according to whether the variegation consists of white or coloured marks; but the actual cause of variegation is not known. Variegated forms are much sought after by gardeners, and, where possible, perpetuated by them for horticultural purposes. In this way have arisen the many variegated forms of *Codiaeums* or *Crotons*, *Coleuses*, *Amaranths*, *Acalyphas*, etc., common in garden culture.

FRUIT OF *CARISSA OVATA*, *R.Br.*

A common shrub on the edges of "scrubs" (rain forests) and on better soils about Brisbane is *Carissa ovata*, a member of the family Apocynaceæ. In Bentham's "Flora Australiensis" and in Bailey's "Queensland Flora" the fruit is described as "usually 1-seeded." I have examined numbers of them, however, and found them to be usually 6-8 seeded. The following amended description is accordingly offered:—

Fruit blackish-purple, fleshy, edible, ovoid or ellipsoid, about $\frac{3}{4}$ in. long, 6-8 seeded, seeds brown, flat, irregularly triangular, 3 lines long, 2 lines broad, placed 3-4 on each side of a somewhat central, fleshy placenta.

FURTHER NOTES ON *TECOMA HILLII*.

Since my article on this climber appeared in the October number of the *Queensland Naturalist*, Mr. W. R. Petrie has supplied the following additional information:—

"It is somewhat remarkable that the plant was not rediscovered during the interval between 1876 and 1914, seeing that it is rather common along the banks of creeks on Fraser Island. Still, I have found it to be by no means conspicuous, never having had the luck to find it in open sunlight, as Mr. Turner evidently did, in which position it could be expected to flower to greater advantage. The first time I saw the flower was in 1914 about six miles up Bogimba Creek, Fraser Island. My son Tom and I were in a dense patch of scrub on the creek bank when he picked up a loose flower on the ground. I knew that none of the trees present was responsible for the beautiful flower, so began an inspection of the vines, and soon located the correct one. Later, I found it on Wungoolba Creek, and near my first camp on the island (Dipu-yuing) at a spot practically at the junction of the scrub with the forest, and, as usual, with its roots practically in the water."

The rediscovery of this plant and the fact that it is fairly common, at least in one locality, emphasise the fact that a very great deal yet remains to be done in the field of botanical exploration in Queensland.

ORIGIN OF COMMON NAME OF A NATIVE PLANT.

On the higher parts of the Macpherson Range one of the common plants along the creeks is *Helmholtzia glaberrima*. This plant grows only in the watercourses, with its roots extending into the running water. It has large, flag like leaves, and about Christmas-time bears very large bunches of white flowers, and is undoubtedly one of the most beautiful of native flowering plants.

The accompanying photograph, taken by Mr. A. H. Burbank, on Upper Nerang Creek, gives a good idea of the appearance of the plant in its natural habitat.

Mr. Burbank when surveying the Springbrook area for selections some years ago (1905) sent down specimens of the plant to the late F. M. Bailey, then Government Botanist. The latter returned the name as *Helmholtzia glaberrima*. By a corruption of the specific name, the plant is now known universally among selectors on Springbrook Plateau, Macpherson Range, as the "Glaberrina." This explanation is given because the sobriquet is now well established, and in later years, and even now, probably by most it may be thought to be of aboriginal origin.

The generic name "Flindersia" is another botanical name that has been corrupted by bushmen. "Flindosia" or "Flindosy" are names applied by them to *Flindersia australis*, a tree most generally known in Queensland as Crow's Ash, and in New South Wales as Teak.

AN ENTOMOLOGIST IN THE INTERIOR.

By A. JEFFERIS TURNER, M.D., F.E.S..

(Part I.)

Charleville is nearly 500 miles from Brisbane by rail, but considerably less in a straight line. Careful measurement on the map from the nearest part of the coastline, which is in the neighbourhood of Gladstone or Keppel Bay, shows that it is more than 300 miles from the sea.

It is a place that I have long desired to visit, but for one reason or another, the exigencies of medical

practice, the greater attractions of other localities, or the unpropitiousness of the seasons, this visit has been postponed until the year just past. It would probably repay one little to visit Charleville to collect lepidoptera in midsummer or midwinter, or during one of the spells of drought to which the district is frequently subject. But last spring the rainfall had been good, and since the winter there had been an extraordinary growth of vegetation following the breaking-up of several years drought. I made my trip early in September, collected there diligently for five days, from Sept. 8th to Sept. 13th, and thereby gained for the first time a first-hand knowledge of the lepidoptera of the interior.

It must not be supposed that I knew nothing previously of the subject. Many years ago a lady visiting Cunnamulla sent me many species of moths, the most interesting of which was a new bossid, *Xyleutes eremona*, Turn., which Mr. W. W. Froggatt has since sent me from Brewarrina, in Western New South Wales. Some years later I was fortunate in enlisting the services of a schoolgirl who spent some months in Adavale and sent me many species, including many of the smaller kinds, of which several proved to be new species. These were taken in the autumn and usefully supplement my own collection made in spring. I also received a good many species from a young school-teacher at Miles, which are, I believe, all inland species, though nearly all of them are found also on the coast, but as Miles may be considered an intermediate locality, I have not included it in this paper. Recently Mr. Taylor has sent me a few species from Roma.

In 1914 I received from Mr. A. M. Lea a collection of moths made by Capt. S. A. White during a trip through the McDonnell Ranges, to be worked out for publication in the Trans. Roy. Soc., S.A., of the same year. This journey was made in midwinter during a period of drought. Capt. White is an ornithologist. After working hard all day he would sit up several hours during the night skinning birds, and the moths obtained had visited his lamp while he was so engaged. Under the circumstances it is not surprising that the collection was a small one, but to me it was of great interest, and the conclusions I drew from it are closely similar to those which I shall submit in this paper. In the following year another small collection was received from the same source, made during a similar winter trip to the Musgrave and Everard Ranges, of north-west South Australia.

Thus, I have been enabled in some degree to collate the lepidopterous fauna of Central Australia with that of Western Queensland.

To return to my journey. Travelling by slow western trains is very tedious, but it enables one to see something of the country. As far as Dalby this was familiar. From Chinchilla to Dulacca is poor country, covered with small timber and densely carpeted with prickly pear. Collecting here would be extremely difficult; in fact, the pear has spoilt the country even for the entomologist. I was struck with the beauty of the country between Roma and Mitchell, which rivalled the Darling Downs at their best. It was better wooded and more undulating. Along the line were stretches of flowers in mass, among which a crimson *Swainsonia* (?) was conspicuous. As I gazed on this beautiful and diversified country I could not help reflecting on the inadequacy of the means at my disposal. If I were the man of wealth members of my profession are popularly supposed to be, I would tour this country for two months in a powerful motor-car. I would carry a tent for camping out at all likely spots, and a strong lamp for attracting insects at night. Seductive but impossible day-dream! Let us rather confine ourselves to the practicable. Perhaps by collecting diligently in one spot, if only for a few days, one may learn something valuable of the fauna of the interior.

At Mitchell I had one afternoon. It was very hot, and I had difficulty in walking as far as the nearest collecting ground. There I found moths were scarce, but made a few interesting captures. One was *Philobota irruptella*, Zel., showing that this common coastal species spreads far into the interior. Another was *Boarmia penthearia*, Gun. (form *rupicolor*, Bute). This occurs commonly on the coast both of Southern Queensland and West Australia, though absent to north and south. Mr. Meyrick long ago anticipated that this species would be found to occur in a belt right across the continent, and my capture confirms this. A few micros taken appeared to belong to new species.

After Mitchell the country was less attractive, and pear reappeared, but only in patches. I arrived in Charleville on a hot day, and during my first $2\frac{1}{2}$ days the heat was oppressive from 10 a.m. to 10 p.m. Then the weather changed and for $2\frac{1}{2}$ days was just perfect, so that I could walk out and collect at mid-day without discomfort. I made an arrangement with a local cabman which enabled me to explore the country within three

miles of the town without fatigue and loss of time. It is no use searching for micro-lepidoptera when the sun is high. The only favourable times are very early in the morning, and for about one hour before sunset. One day I had a stroke of luck. A storm was impending in the afternoon. It overtook me walking, and I was soon drenched in a driving squall. Warm rain hurts no one if he keeps moving; but I had caught nothing. Then I noticed near the railway-station a half-acre allotment surrounded by a paling-fence and containing, fortunately, some native trees and bushes. The sky had cleared and the wind veered to the west. On the eastern side of this short fence I found a score of exquisite tiny micros, including several species new to science, which I could not have taken in any other way. The squall had driven them out of the foliage of the trees, and they had taken shelter on the lee side of the fence, from which I picked them off as easily as blackberries. I called this luck; let me be more accurate; it was experience taking advantage of opportunity! I had the curiosity to revisit this fence next day, but found nothing.

Charleville is situated on an area of light, sandy alluvium, which at the time of my visit was a botanist's paradise. Wherever fenced from stock the ground was covered with a luxuriant herbage, mostly in blossom, forming dense sheets of blue and orange and yellow. Most of the species were new to me, and this was even more so with the trees and shrubs. There is a light forest of Eucalyptus of several species, the most common having poplar or aspen-like leaves. Masses of mulga (*Acacia aneura*) occur with other shrubs which Mr. C. T. White has kindly named for me. Here also I became acquainted with the genus *Eremophila*, with its gloxinia-like flowers, the small flowered *E. mitchelli*, or Sandalwood, with small fugaceous white corollas, *E. longifolia*, with spotted flowers, and a small shrub, very near if not identical with *E. goodwinii*. The last was abundant, and its numerous pale-purple blossoms are sufficiently showy to make it worthy of culture in gardens.

Another possible garden plant was the handsome *Cassia pleurocarpa*. Two curious shrubs or small trees were the Wilga (*Geijera parviflora*) and the proteaceous *Halsea purpurea*. The latter was not in flower, but noticeable for its curious acicular foliage. I will not attempt any list of the herbaceous flowers, and will only mention the glorious feast of colours provided by masses of

Wahlenbergia, *Helipterum*, and *Helichrysum*. I must, however, not omit *Erodium cygnorum*, closely allied to *Geranium*, a true cranesbill, with small blue flowers. This was a very English-looking plant to inhabit Central Australia. Locally it is known as crowfoot, and is said to be good fodder.

Insects were not so plentiful as I expected. Indeed, except for some common species, which abounded everywhere, they appeared to be scarce, and required diligent search. This was not made easier by the swarms of *Plutella maculipennis*, the diamond-back cabbage pest of gardens all over the world, which had certainly not here fed on cabbages, nor by the large numbers of the two Tortricids, *Encosina plebeiana* and *Argyroplote doxicastana*, together with some larger forms, such as *Loxostege affinitalis*, *Acidalia rubearia*, *Neocleptria punctifera*, and *Heliothis obsoleta*. But by setting myself to the task I did better than appeared likely at the first.

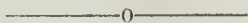
Of butterflies I saw eleven species. Once, about mid-day, an example of *Papilio sthenelus* flew past near enough to be recognised with certainty, though I had no chance to catch it. Waterhouse and Lyell remark that this is an inhabitant of the dry interior districts. *Catopsilia pyranthe* was seen hovering over its food plant, *Cassia pleurocarpa*. I saw it close and it could have been nothing else, unless it were the form *lacteola*, which I believe to be the same species; for I have taken both forms pairing. The other nine species were all captured. *Anaphilis java* was fairly common, as was *Terias smilax*. An unexpected find was an *Elodina*, which I took to be *augustipennis*, but which turns out to be *padusa*, Hew. Unlike other species of the genus, *padusa* has been taken only singly on the coast and tablelands. I observed it fluttering over a Capparid bush and captured four examples in two minutes, which is, I believe, a record. I think it probable that the real home of *padusa* is the interior, but that, being of wandering habits, it occasionally visits the coast in small numbers, especially in dry seasons.

Precis villida and *Pyrameis kershawi* were abundant, the former worn, the latter very fresh. Among the Lycaenidæ *Zizina labradus* and *Macaduba biocellata* were not rare, and in the vegetable gardens near the creek I took two of the ubiquitous *Lampides boeticus* among some broad beans. But the most striking capture was *Ogyris amaryllis*, Hew., of the race *meridionalis*, and

corresponding exactly to examples from Birehip, Victoria.

It was a very hot morning, I was returning home weary, when one flew past the cab. I got out and missed it, but soon found that they were in numbers chasing each other round a sort of circle among some gum saplings, keeping quite near the ground. In spite of their erratic, mazy flight, by standing still at one spot I was able to capture them easily as they flew past, by a short following stroke. In this way I took ten examples, all males, in about as many minutes. I then left them, for I did not want to exterminate the species. I should be sorry to do that. I like to think of them as still flying round in giddy circles, flashing their azure wings in the brilliant sunshine, not only at Charleville, but at hundreds of places in the Never-Never country, supposed by some to be so gloomy and so sterile.

(To be Continued.)



CANNIBALISM AMONGST SNAKES.

An interesting case of cannibalism amongst snakes is reported by the Director of the Queensland Museum (Mr. H. A. Longman).

On Tuesday, March 8th, a live specimen of the yellow-spotted black snake (*Pseudechis guttatus*), which is a rare ally of the common black snake, was placed with another specimen in a strong enclosed case on the museum verandah, which was tenanted by a live death adder. The next morning the death adder had disappeared, and an obvious increase in the girth of the yellow-spotted snake gave evidence of a surprising meal. On Wednesday morning the death-adder was disgorged, being dead, of course, and considerably damaged.

The yellow-spotted snake, which is a very vicious species, and flattens its head after the fashion of the Indian cobras, was about 4 feet in length, and was captured near Benarkin by Mr. E. H. Belson. The death adder, although less than half that length, was a robust specimen, and it is somewhat surprising that so muscular and venomous a species should have fallen a victim to the appetite of the other snake.

The death adder had been living in the Museum since November 21, 1918, when it was donated by Mr. V. W. A. Moller, this being an unusually long time for this

species to survive in captivity. The disgorged specimen has been preserved for exhibition in view of its eventful history.

As a misconception is occasionally made about the term "adder," it should be stated that this reptile is a true snake.

RHOPALOCERA OF THE JANDOWAE DISTRICT OF THE DARLING DOWNS.

(Noted during visits in February and December, 1920.)

By R. ILLIDGE.

- | | |
|---|---|
| 1. <i>Danaida chrysippus petilia</i> , | Not uncommon. |
| 2. <i>Euplœa corinna</i> , McLeay .. | Not uncommon, probably
feeds on <i>Lyonsia</i> |
| Stoll. | |
| 3. <i>Precis villida</i> , Fabr. .. | Common |
| 4. <i>Pyrameis kershawi</i> , McCoy | Common |
| 5. <i>Acrœa andromacha</i> , Fabr. .. | Rare |
| 6. <i>Candalides xanthospilos</i> , | Not common |
| Hubn. | |
| 7. <i>Candalides heathi</i> , Cox .. | Common in February |
| 8. <i>Syntarucus pseudocassius</i> , | Garden only |
| Murr. | |
| 9. <i>Lampides bœticus damætes</i> , | Garden only |
| Fabr. | |
| 10. <i>Zizera labradus</i> , Godt. .. | Common |
| 11. <i>Neolucia serpentata</i> , H. S. | Rare |
| 12. <i>Theclinessthes miskini</i> , Lucas | Common on flowers of
<i>Lyonsia</i> |
| 13. <i>Lucia lucanus</i> , Fabr. .. | No males seen, but fe-
males not uncommon |
| 14. <i>Ogyris amaryllis hewitsoni</i> , | |
| 15. <i>Ialmenus dameli</i> , Semp. .. | <i>Atalantia glauca</i> |
| 16. <i>Protialmenus ictinus</i> , Hew. | Common |
| 17. <i>Delias aganippe</i> , Don. .. | Rare |
| 18. <i>Delias argenthona</i> , Fabr. .. | Not common—larva on
Common |
| W'house | |
| 19. <i>Catopsilia pomona</i> , Fabr. .. | Common, var. with pink
underwings |
| 20. <i>Anaphœis java teutonia</i> , | Very common |
| McLeay | |
| 21. <i>Terias smilœx</i> , Don. .. | Rare |
| 22. <i>Terias herla</i> , McLeay .. | Rare |
| 23. <i>Papilio demoleus sthenelus</i> , | Rare |
| 24. <i>Papilio anactus</i> , McLeay .. | Rare |
| 25. <i>Papilio œgeus</i> , Don. .. | Plentiful |

This list sufficiently indicates the paucity of species found in the district, but must not by any means be considered as perfect, for no doubt other forms occur. The most abundant of all is No. 20, which has completely denuded the caper trees (*Capparis* sp. ?) of foliage. Nos 8 and 9 were only seen in the garden of the homestead, the first about plumbago and the second on beans. No. 19 was also only noted a few times about the garden and as the larvæ of these insects feed on *Cassia*, no plants of which were in evidence, they must have travelled a long distance. No. 14: Of these a batch of larvæ and pupæ were found in February on myall*, which bore the parasitic *Loranthus pendulus*, and in December a few specimens were seen flying round the belah or belar, a *Casuarina*† on which *Loranthus linophyllus* grew. No. 15 was abundant in all stages on young myall trees and No. 16 on brigalow,‡ both attended by ants, the latter by the large meat ant, *Iridomyrmex detectus*.

SYLLABUS, JULY-SEPTEMBER.

July 9: Excursion to Tarragindi, near Mt. Gravatt.

July 18: Evening Meeting, Reports, etc.

August 15: Evening Meeting; "Torres Strait," by Mr. E. W. Bick.

August 27-28: Excursion to Bribie Island.

September 10: Excursion to Sunnybank.

September 24: Wild Flower Show and Natural History Exhibition.

* *Acacia pendula*, A. Cunn.

† *Casuarina lepidophloia*, F.v.M.

‡ *Acacia harpophylla*, F.v.M.

The Queensland Naturalist.

THE ORGAN OF THE FIELD NATURALISTS' CLUB
AND ITS BRANCHES.

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No. 2.

PROCEEDINGS.

July to September, 1921.

July 18.—The President announced that the voting in connection with the proposed amalgamation of the Field Naturalists' Club with the Gould League of Bird-lovers had been largely in favour of the proposal, and that a combined meeting of the Committees would be held to consider the matter further. The meeting was devoted to general contributions by members, and some interesting exhibits were shown and information given.

August 15.—Lecture: "The Islands and Mainland of Torres Strait," by Mr. E. W. Bick, Director of the Brisbane Botanical Gardens. Mr. Bick made his visit in 1911, as botanical collector to a party led by the late Sir William MacGregor. About sixty admirable slides were shown, and a large audience was kept closely interested in the lecturer's story.

August 20-21.—Week-end visit to Bribie Island, Moreton Bay. Twenty-one members took part in what proved to be an instructive and enjoyable outing. All phases of the Club's activities were well represented.

August 25.—Lecture by Mr. A. R. McCulloch, Zoologist of the Australian Museum, on "Lord Howe Island—a Tragedy of the South Seas." His Excellency the Governor (Sir Matthew Nathan), who was welcomed by the President, presided. Lord Howe Island, Mr. McCulloch stated, is an isolated volcanic outcrop, less than 500 miles north-east of Sydney, and up to a few years ago it was the home of many very interesting birds and a source of supply of a particular species of table palm favoured in many parts of the world. Three years ago a steamer was wrecked off Lord Howe Island, and from that steamer there escaped rats, that have spread to such an extent as practically to ruin the island. They have checked the breeding of birds by devouring

their eggs; they have chewed and ruined much valuable palm-seed; they have seriously affected cultivation (particularly of fruit) on the island; and between whiles they have eaten largely of snails. The dense nature of the undergrowth has rendered the extirpation of the rodents an exceedingly difficult matter, but the problem has been tackled determinedly. Recently a thick covert was cleaned away, and 12,000 rats killed, and it is hoped that the rest may be kept in control. This story was a feature of Mr. M'Culloch's address, but he also gave a good deal of interesting information about the island, and showed, with the aid of a lantern, much of the rugged beauty and luxurious vegetation of the area.

September 17.—Annual Wild Flower Show and Natural History Exhibition. The display in all sections was good, and there was a crowded attendance. Those present included His Excellency the Governor (Sir Matthew Nathan), who was welcomed by the President of the Club (Mr. A. H. Chisholm), and shown through the flower sections by the Government Botanist (Mr. C. T. White). His Excellency was warmly appreciative of the grace and beauty of most of the flowers, and expressed the view that they should be more cultivated. He also admired a fine collection of photographs, lingered over the microscopes, and viewed with appreciation other sections of the exhibition. Prior to the arrival of His Excellency, the show was officially opened by the Mayor of the city (Alderman H. J. Diddams, C.M.G.), who emphasised that the naturalists were engaging in a delightful and valuable hobby.

The photographs comprised a large number of studies of wild birds and their nests, taken by Messrs. A. H. Chisholm (Brisbane) and D. W. Gaukrodger (Alice Downs, Blackall), a fine lot of scenic views by Messrs. R. L. Higgins, C. S. Fryer (Brisbane), and H. D. Curtis (Albert River), and some remarkable enlargements of pond life studies by Mr. W. R. Colledge, who was assisted by Mr. W. M. Tanner. Other exhibits were several cases of radiant butterflies and moths, shown by Mr. R. Illidge, Mr. S. Hainsworth, and Dr. Jefferis Turner, a few unique birds' nests (taken after use), a good range of mineral specimens, shown by Mr. J. R. Dunlop, and a coral jardiniere from one of the Pacific Islands, shown by Mrs. C. A. MacFarlane.

BOTANY.

Interstate Exhibits.—From Mr. J. H. Maiden, Director of the Botanic Gardens, Sydney, a collection of wild flowers from the Hawkesbury sandstone. From Mr. J. F. Bailey, Director of the Adelaide Botanic Gardens, a collection of wild flowers gathered by members of the Field Naturalists' section of the Royal Society of South Australia. From Miss Margaret A. Campbell, Piccabeen, N.S.W., a collection of Northern New South Wales species, including the large ground orchid, *Phaius grandifolius*. By Mrs. Cribb, specimens of waratah (*Telopea*) and *Sprengelia* from the Sydney district. By Mrs. Fordham, a bowl of the West Australian everlasting (*Helipterum Manglessii*).

Queensland Exhibits.—By Miss H. Geissmann and Mr. Colin Geissmann, a very comprehensive collection of wild flowers of Tambourine Mountain. Especially noteworthy in this collection were some daintily arranged vases of the ground orchids, *Gastrodia sesamoides* and *Diuris sulphurea*, the scented or flowering rush (*Xerotes longifolia*), buttercups (*Ranunculus lappaceus*), &c. By Mr. H. D. Curtis, a large collection of plants from the Albert River and Redland Bay districts, including specimens of native flowering trees, as *Pentaceras australis*, *Banksia integrifolia* (white honey-suckle), *Aegiceras majus* (river mangrove), &c. By Mr. Fagan, specimens from Stradbroke Island, including *Boronia pinnata* and the two large ground orchids *Phaius grandifolius* and *Phaius Bernaysii*. By Mr. and Mrs. H. W. McPherson, specimens from Bribie Island, including *Boronia falcifolia*, *Conospermum taxifolium*, and two species of *Phaius*. By Miss Murphy, specimens from Redcliffe and Tugun. By Mr. Wm. Stewart, specimens from Roma. By Mrs. Doyle, Miss F. Bage, and Miss H. D. Clark, specimens from Mount Gravatt and Sunnybank.

Special thanks are due to the following members, who gave considerable time in the afternoon and evening to arranging and selling flowers:—Mesdames Smith, Higgins, and Curtis, Misses H. D. Clark, E. N. Parker, H. Geissmann, N. Baird, and L. Wilkie, Messrs. G. H. Barker, J. C. Smith, H. D. Curtis, and W. D. Francis.

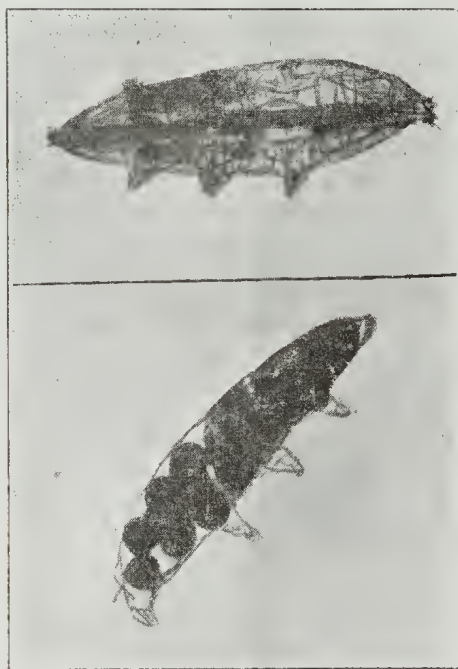


TRANSACTIONS.

WATER BEARS, OR TARDIGRADA.

By W. R. COLLEDGE.

These quaint and curious creatures are very widely diffused, but seldom noticed, because they are not searched for. They measure less than a millimetre in length, and greatly resemble a minute bear while in their habitat.



Sub-Kingdom Arthropoda.

Class II. Arachnida. Order viii., Tardigrada, Milnesium.

Recently, when I pulled up a tuft of grass, soaking and shaking it in a glass of water, our little tailless friend appeared in the sediment.

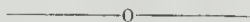
The water bears have been neglected until recent years, and now a large number of species are described. The one under observation corresponds with genus 6 *Milnesium*, Doyle. The body shows scarcely a trace of segmentation,

and the four pairs of feet are simple tubercles, tipped with a pair of double claws. The transparent cuticle is separated from the epiderm by a space filled with fluid, in which float a number of large corpuscles. Here lies also a beautifully symmetrical system of plain muscular bundles, dorsal, ventral, and lateral. A brain and four ganglia send threads in various directions to supply nervous force.

Their food consists of vegetable sap. Two rod-like teeth pierce the plant, a hollow mouth tube is applied, and by the operation of a muscular pharynx the food is sucked down into the stomach.

The outer cuticle is thrown off at times, but is used as a receptacle for the eggs, from four to ten being found. Thus protected, they hatch after a few days, and are able to care for themselves. Some species have great vitality. In dry weather they shrivel into a shapeless granule, and remain for months in that state, but on being moistened gradually fill out, and resume their old activity.

One of the photographs shows the nervous and muscular structure, and the other is one in the process of casting off the skin, with half a dozen eggs enclosed.



TWO NOTABLE BEETLES.

By R. ILLIDGE.

(Notes on the habits of two species of Staghorn Beetles, sent from Atherton, North Queensland, by Mr. H. C. Hayes, of Kyogle, New South Wales.)

The beetles forwarded are *Phalacrognathus muelleri*, McLeay, and *Lamprima mandibularis*, McLeay.

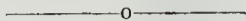
P. muelleri is not by any means the largest or most remarkable, but certainly the most effulgent in coloration, of all the known insects of this family of beetles throughout the world. Its nearest relative is undoubtedly the insect next referred to, and McLeay, when describing it, having only a female before him, called it *Lamprima muelleri*; remarking, however, on certain differences which seemed to constitute almost generic characters. Having afterwards obtained the male, he formed the genus *Phalacrognathus* to receive it.

Mr. Hayes remarks on its habits as under: "This species is found only on one tree, *Evodia micrococca*. The beetles remain in hiding during the day, lying close to the trunk of the tree, and venture out at night to feed on the leaves."

The description of its habits, as given by Mr. Hayes, tallies with what has been related in regard to the remarkable Chilian species, *Chiasognathus grantii*, perhaps the strangest of all, having mandibles even longer than its body, curiously bent, and with two long spines arising from the base beneath; the whole insect deep sericeous green relieved with carmine, but without the highly-polished surface of *P. Muelleri*.

Lamprima mandibularis, McLeay.—This genus ranges from New Guinea to south West Australia. The present species has been placed under Gestro's genus *Neolamprima*, which was formed to receive a New Guinea insect. However, from our present knowledge, especially A. M. Lea's paper on *Lamprima*, I think we must revert to *Lamprima* for the Queensland insect, not knowing the New Guinea one. The remarkable variation in size of mandibles is common to the males of stag-beetles in all parts of the world, wherever they are found, and hence cannot be regarded as of generic consequence. In Chili, again, we have the genus *Pholidotus*, very like the long-mandible form of this insect, but without the splendid color.

Mr. Hayes says: "The favourite tree of this species is prickly ash or Strychnine-bush, as it is sometimes called."



SOME NORTH QUEENSLAND BIRDS.

By J. E. YOUNG.

Of all parts of our State I think the best for birds, and more particularly waterfowl, is the North. Here is a veritable paradise for the Nature-lover, and (in the season) for the sportsman.

The swamps are filled with Ducks of various kinds; Black Ducks and Whistlers, I think, predominating. Leach describes the latter species as rare, but it occurs in large flocks in some parts of the North. They often rest on the branches of trees. I have killed as many as five in one shot and found them to be good eating. The Black Duck is too well known to need any comment. Other Ducks are also to be seen, though I did not come much into contact with them.

The Magpie Goose (*Anseranas semipalmata*) is, as its name indicates, about half black and half white, and its feet are partly webbed. It occurs sometimes in considerable flocks, and is noticeable for its peculiar habit of resting on the top of the bushy branches of trees, in a somewhat clumsy

fashion, and not on the limbs themselves, possibly owing to the half webbed nature of its feet. Personally, I consider this bird, when well cooked, to be second to none in the game line.

Cormorants, both the Little Black and Pied varieties, are numerous, especially the former, and principally on the deeper holes with tree-lined margins.

Ibis are common in all species—Straw-necked, White, and the beautiful Glossy Ibis, with its shining bronze-coloured plumage; it is slightly smaller than the other two species, but a more neatly built bird. These are amongst our most useful birds in destroying beetles, grasshoppers, &c.

Spoonbills are to be seen in lesser numbers, and are handsome and conspicuous as well as useful birds. Both species have pure white plumage, but one has yellow bill, legs, and feet, and the other black points. While they may separate during the breeding season, I have often noticed that both species keep company almost indiscriminately. This I have remarked also in the western country, where, I regret to say, some are shot for food and some because they muddy the waterholes from which the teamsters' horses drink.

The Native Companion (Brolga) is fairly common, and its stately form may often be seen parading the open swampy country. If one is lucky he may see them at one of the dances for which they are famous.

Besides the Jabiru (Stork) and varieties of Heron (including the Nankeen Crane) I saw large numbers of one, if not two, of the Egrets. I was told of a nest of these birds in a Leichhardt tree, but did not succeed in locating it.

On mud and sand banks might also be seen numbers of other birds, such as Plovers, Curlews, Dottrels, &c., and I saw one specimen of a beautiful blue-black and white bird with long red bill and legs, probably a Stilt, working along the mud bank of a creek. Many Bald Coots, known as Redbills, frequent the swamps, and the black Water or Moor-hen the upper parts of creeks, &c. Possibly the presence of crocodiles is somewhat against their presence in the lower portions, also the salt water.

Often when roaming about and coming across a picturesque scene, including various species of waterfowl, I have longed for a camera with a telephoto lens, the ordinary camera in most cases being inadequate to do justice to the subject. Incidentally, I might also remark that when stalking in such swampy spots, whether for observation or pot hunting, one meets an element of danger in the snakes which abound. On one occasion I disturbed

the largest black snake I ever saw, and on another day rode my horse over two snakes, a black and a brown, before I was able to pull up, luckily without mishap.

Of other birds, the Scrub Turkey (Megapode) is common in the scrubs, where it builds its huge mounds of leaves, &c., in which to deposit its eggs to incubate. The Turkey is very fond of the sugar-cane in neighbouring farms, to the disgust of the owners. The birds peek out the whole of a section between two joints in the cane, with the result that the rest of the stem dies. Many, of course, get shot for the table; but this Turkey is one of the wariest birds known, and unless the hunter has a good dog is hard to get.

The borders of scrubs and creeks abound in many other species of birds, Honey and Caterpillar-eaters, Kingfishers, Doves, &c. In about twenty minutes once on the Proserpine River, about 100 yards from the Hospital, I counted fully twenty species. The Shining or Metallic Starling is common on the Barron River. It is peculiar for living in colonies, and building quite a number of suspended domed nests in the one tree. It is a pretty bird with forked tail and glossy plumage, and usually flies to and fro in flocks with a flight somewhat similar to a Martin. I believe it migrates to New Guinea.

Crows are very common, and accompanying one flock at Proserpine was a Corella (cockatoo), gone wild from captivity. It could "caw" almost as well as any of the Crows, and was often teased by its companions, though it appeared well able to hold its own.

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LAND SHELLS OF THE QUEENSLAND NATIONAL PARK.

By JOHN SHIRLEY, D.Sc., F.M.S., Corresponding Member,
Royal Society of Tasmania.

The gradual opening up of our great National Park has led to visits by naturalists anxious to study the rich stores of plants and insects, and to observe the habits of the birds in localities where many of the smaller species can build and rear their young in security. Several of these collectors have incidentally obtained specimens of land shells, while seeking for other forms of life.

Mr. S. W. Jackson, R.A.O.U., visited Roberts Plateau in September, 1919, and again in the same month of 1920,

in the interests of ornithology, and most interesting accounts of his visits are recorded in the columns of "The Emu." He is also a conchological collector of note, and his shell collection contains many species from the dense scrub country of the higher parts of the Park, and from the ravines formed by streams along its northern slopes. In March last Dr. A. J. Turner also made a journey to Roberts Plateau, and donated a few land shells to the Queensland Museum, incidentally collected during his search for micro-Lepidoptera. The writer spent some thirteen weeks in the National Park—six weeks on Roberts Plateau in company with Mr. H. Tryon; four weeks at the eastern end, mainly in the upper valley of the Coomera, with Messrs. Hacker, Illidge, and Wedd; and three weeks in several short visits to the Lamington Plateau.

Land Shells from the National Park.



Centre: *Papuina turneri*. Sides: *Papuina fucata*.
(Photo by H. Hacker.)

The following list shows the shells found on the several visits enumerated:—

PULMONATA.

A. RHYTIDIDÆ Tryon, Man. Mol., 2nd series, I, 112.

Shell umbilicated, thin, convexly depressed, undulately striate or rugose; spire slightly elevated, whorls 4 or 5, somewhat flattened obliquely; umbilicus rather wide and deep; aperture oblong-ovate, sometimes dentate within, lip simple, acute, its extremities approaching. Animal viviparous; the lingual teeth rather few, oblique, arcuated; no jaw.

I. RHYTIDA Albers. Characters as above.

1. *confusa* Pfr. Tryon, loc. cit. I, 125; Pl. 22, f. 21-2.
Cox, loc. cit., p. 24. Pl. iv, f. 3; xviii, f. 4.

2. *strangei* Pfr. Tryon, loc. cit., Vol. i., p. 123; Pl. 22, f. 27; 28, f. 49. Cox, loc. cit., p. 26; Pl. 18, f. 17.

- II. 3. *ELÆA splendidula* Pfr. Tryon, loc. cit., vol. I., p. 129; Pl. 26, f. 20-2. Cox, loc. cit., p. 10, Pl. 3, f. 3.

B. ZONITIDÆ Tryon, loc. cit., II, 3.

III. *MICROCYSTIS* Beck. Tryon, loc. cit., II, 8.

Shell small, subperforated, usually slightly keeled, glabrous; aperture large, subvertical. Mantle margin with shell lobe on right side only; left cervical lobe bipartite.

4. *subrugata* Pfr. Cox, loc. cit., p. 4, Pl. IX, f. 2. 2 (a), 2 (b). Tryon, loc. cit. II, 169.

5. *subrugata* var. *pubibunda* Cox, loc. cit. p. 4, Pl. II, f. 11. Tryon, loc. cit. II, 214; Pl. 62, f. 58-9. Hedley, Proc. Lin. Soc., N.S.W., vol. 37., p. 261.

- IIIa. 6. *HELICARION robusta* Gld. Tryon, Man. Moll, I, 169, Pl. 38, f. 42-3.

7. *strangei* Pfr. Tryon, loc. cit. I, 169; Pl. 38, f. 44-5.

C. ENDODONTIDÆ.

Marginal teeth with wide, short and squarish basal-plates with one or several cusps, the outer cusp never elevated on middle cusp. Shell with opaque brown colouring or flammules, usually rib-striate, the lip thin, unexpanded and sharp.

IV. *FLAMMULINA* Martens, Tryon. Man. Moll., Sec. Series, vol. IX, p. 10.

8. *corticicola* Cox. Tryon, loc. cit., p. 34; III, 44, Pl. v, f. 71-2. Hedley, Proc. Lin. Soc., N.S.W., vol. 37, 1912, p. 264, Pl. 8, f. 46-8. Cox, Aust. Land Shells p. 19, Pl. VII, f. 7 and 7 (a).

9. *zigzag* Gould. Tryon, loc. cit. IX, 13 II, 210, Pl. 62, f. 35-7. Cox, loc. cit., p. 18, Pl. XIX, f. 11 and 11 (a).

V. *ENDODONTA* Albers. Tryon, loc. cit., p. 20.

Shell small, varying from discoidal to trochiform, generally umbilicated; the surface striate or ribbed. Aperture varying from multidentate to toothless; peristome simple. Type, *E. lamellosa*, Fer.

10. *austera* Hedley. Proc. Lin. Soc., N.S.W., vol. 37, 1912, p. 266, Pl. IX, f. 52-4.

11. *cinnamca* Hedley, loc. cit., p. 267, Pl. IX, f. 55-6; X, f. 57.

12. *vinitincta* Cox. Tryon, loc. cit., p. 35; I, 115; Cox, loc. cit., p. 18, Pl. I, f. 6, 6a.

13. *inuloidea* Forbes. Tryon, loc. cit., p. 34; II, 209, Pl. 62, f. 28-9.

D. HELICIDÆ Pilsbry. Tryon, loc. cit. IX, XXVI.

s. *Macroogona* Tryon, loc. cit. IX, XXXII.

VI. *PEDINOGYRA* Albers. Tryon, loc. cit. IX, 158.

Shell large and discoidal, with flattened spire and broadly open umbilicus, solid, opaque and coloured. Whorls 5-6, the last large, deeply deflexed in front. Aperture oblong-truncate, nearly horizontal, the lip slightly expanded, blunt. Type, *P. cunninghamii* Gray.

14. *cunninghamii* Gray. Tryon, loc. cit., vi, 14; Pl. 2, f. 28-31; ix, p. 159. Cox, loc. cit., p. 52, Pl. 1, f. 5. Hedley, Proc. Roy. Soc. Qd., 6, p. 63, Pl. 3.

15. *muhlfeldtiana* Pfr. Tryon, loc. cit., vi, 15; ix, 159. Cox, loc. cit., p. 53, Pl. vi, f. 2. Sometimes given as a variety of 14.

VII. *PANDA* Albers. Tryon, loc. cit., vol. ix, p. 163.

Shell bnlimoid rather than helicoid; globose-oblong, higher than wide, umbilicate or perforate, thin but strong. Whorls $4\frac{1}{2}$, the first two from apex finely beaded; apex obtuse. Last whorl very large, hardly descending in front. Aperture large, subvertical, higher than wide; outer lip thin, not expanded; columellar lip reflexed towards its insertion. Type, *P. falconeri*, Reave.

16. *falconeri* Reeve. Tryon, loc. cit., vol. vi, p. 75, Pl. 19, f. 33; ix, p. 164. Cox, loc. cit., p. 5, Pl. vi, f. 6.

17. *maconelli* Reeve. Tryon, loc. cit., vol. vi, p. 76, Pl. 19, f. 26; ix, 164, as variety of 13. Cox, loc. cit., p. 6, Pl. iii, f. 5.

- s. *Epiphalllogona* Tryon, loc. cit., vol. ix, p. xxx. and xxxv.

VIII. *CHLORITIS* Beek. Tryon, loc. cit., vol. ix, p. 117.

Shell varying from discoidal and biconcave to depressed subglobose with convex spire; the apical whorl flattened or sunken, and showing under the lens regularly arranged granules or hair-points, which often persist over the whole shell. Aperture innate, the lip reflexed. Type, *C. unguina* L.

18. *aridorum* Cox. Tryon, loc. cit., vol. vi, 266, Pl. 58, f. 31-3; vol. ix, 122. Cox, loc. cit., p. 44, Pl. xi, f. 16, 16a.

19. *mansueta* Pfr. Tryon, loc. cit., vol. vi, 264, Pl. 33, f. 64-5; ix, 122. Cox, loc. cit., p. 59, Pl. ii, f. 4.

20. *porteri* Cox. Tryon, loc. cit., vol. vi, p. 263, Pl. 58, f. 23-4; ix, 122. Cox, loc. cit., p. 48, Pl. iii, f. 6a, 6b.

IX. *TIERSITES* Pfeiffer. Tryon, loc. cit., ix, p. 125.

Shell narrowly umbilicate or imperforate, varying from globular to trochoidal or thick lens-shaped and keeled, usually solid. Whorls 5 or 6, the apex smooth, never granu-

lated or punctate in regular quincunx; last whorl varying from smooth to rudely wrinkled, generally densely granulated or roughened microscopically, but never bearing spaced hairs or hair-sears in regular oblique series. Aperture moderately oblique, the outer lip expanded, basal lip reflexed, dilated at the columellar insertion, the ends of the lip rather remote. Type, *T. richmondiana*, Pfr.

21. (*TIERSITES*) *nova-hollandiae* Gray. Tryon, loc. cit., vol. vi, p. 91, Pl. 13, f. 51-2, Pl. 42, f. 24-5; vol. ix, p. 129. Cox, loc. cit., p. 68; and as *dupuyana*, Pl. II, f. 5. Pfr., p. 65.
22. *richmondiana* Pfr. Tryon, loc. cit., vol. vi, p. 90, Pl. 20, f. 34-6. Cox, loc. cit., p. 62, Pl. VIII, f. 5-6.
23. (*SPHAEROSPIRA*) *fraseri* Gray. Tryon, loc. cit., vol. vi, 150, Pl. 33, f. 58-60; ix, 133. Cox, loc. cit., p. 64, Pl. X, f. 6.

X. *PAPUINA* von Martens. Tryon, loc. cit., vol. ix, p. 136.

Shell turbinate, lens-shaped or trochiform, umbilicated or perforate, rather thin; periphery varying from round to acutely keeled. Surface smoothish, the colouring light or bright; aperture oblique, toothless or with a columellar nodule, the peristome thin and generally expanded, ends of the lip remote. Type, *P. lituus*, Less.

24. *conscendens* Cox. Tryon, loc. cit., VII, 14, Pl. 8, f. 50-1; ix, 141. Cox, loc. cit., p. 67, Pl. II, f. 6.
25. *biduilli* Pfr. Tryon, loc. cit., vol. VII, p. 55, Pl. 3, f. 52-3; ix, 142. Cox, loc. cit., p. 63, Pl. II, f. 3.
26. *turneri*, sp. nov.

Shell turbiform of five convex, whorls, apex flattened; suture fine, distinct; base flattened, slightly convex; mouth ovate, outer lip sharp, white within, with a pink outer margin; columellar margin oblique, joined by a callus to the outer lip, separated by a shallow groove from the base. Surface marked by strong, oblique lines of growth, with occasional fine grooves like scratches between them. Ground colour yellowish, with three black bands on the body whorl, the lowest on the base narrow and complete, the central broader, divided into rhomboids, the third below the suture mainly in triangular fragments. On the penultimate whorl are two interrupted bands, resembling the two upper ones of the body whorl. On the brown ante-penultimate whorl is a broken white band. The two apical whorls are pale brown and concolorous. In the body whorl and penultimate is a central white stripe, bordered above by fulvous-yellow. Height, 13.5; width, 15.5; mouth, 7.5 by 6.5 mm. in internal measurement.

Roberts Plateau, March, 1921, collected by Dr. A. J. Turner. Type in Queensland Museum. Two specimens are in the collection of Mr. S. W. Jackson.

A species near *P. fucata* Pfr., from which it is separated by the flattened apex, more convex whorls, and thickened peristome. The animal is unknown.

E. PUPILLIDÆ, Turton. Manual of the Land and Fresh-water Shells of the British Islands, 1831, p. 97.

XI. *PUPOIDES* Pfeiffer. Tryon, loc. cit., vol. 26, p. 108.

Shell small, 3-6 mm. long, rimate, long-ovate, turritid or rarely cylindrical, with obtuse apex and few, 5 to 6, rather long whorls. Aperture ovate, toothless except for a small, tuberculiform, angular lamella close to the insertion of the outer lip, or united with it, rarely wanting; peristome expanded, reflected and usually thickened within. Internal axis slender, perforate. Type, *P. nitidulus* Pfr.

27. *pacificus* Pfr. Proc. Zool. Soc., 1864, p. 31;
Pilsbry, Proc. Acad. N. Sci., Phil., 1900, p. 426,
f. 1; Smith, Zool. Ereb. and Ter., 1874, p. 3, Pl. 4,
f. 6; Hedley Index, Moll. W. Aust., p. 68.

F. PUPINIDÆ.

XII. *PUPINA* Vignard.

Shell pupa-shaped, for the most part covered by a smooth callus, usually polished; aperture circular; peristome simple, thickened or reflected, columellar margin divided in the middle by a transverse channel; right margin forming a second channel at its insertion. Operculum thin, membranaceous, narrow-whorled, flattish.

28. *pincticola* Cox, loc. cit., p. 102, xvi, f. 8, 8a, 8b.
29. *strangei* Pfr. Cox, loc. cit., p. 103.
30. *wilcoxi* Cox, loc. cit., p. 101, Pl. xvi, f. 15, 15a, 15b.

Note.—Besides the species enumerated, Mr. S. W. Jackson collected a young shell which is probably an immature specimen of the rare *Chloritis blackmani* Cox, having five whorls, the first and second reddish, the third and fourth horny and transparent, the fifth pale reddish horny.

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THREE INTERESTING FUNGI.

The accompanying photograph of fungi was taken by Mr. R. L. Higgins on the Club's excursion to Goodna and Woogaroo scrub on the 3rd June last. The central fungus, with lace-like veil, is evidently a fine specimen of *Phallus*

multicolor, one of the phalloids or stinkhorn group of fungi. A fly can be indistinctly seen on the left-hand side of the cap or pileus; the pileus is covered with a stinking brown, more or less liquid substance, termed the gleba, which carries the spores. Carrion-feeding insects are attracted to the gleba by its offensive odour, and thus the spores are spread.

The two ear-shaped fungi on either side are specimens of Jew's ear (*Hirucola polytricha*); this species and its ally, *H. auricula-judae*, are used by the Chinese to thicken soups.



Three Notable Fungi.

(Photo by R. L. Higgins.)

They can be used after drying, and are imported from different countries into China.

The small specimen in the left-hand corner is a specimen of earth star or *Geaster*. The body of the fungus consists of two coats, an outer and an inner one, respectively. The outer, which is of a thick leathery nature, eventually splits in a stellate manner; the inner one is papery and dehiscant at the apex, allowing the minute dust-like spores to escape.—C.T.W.

NOTES ON MISTLETOES.

By C. T. WHITE, F.L.S., Government Botanist.

In forwarding specimens from Kyogle (N.S.W.) of a mistletoe for exhibit at the July meeting of the club, Mr. J. C. Hayes wrote:—"The most remarkable thing about this parasite is that it is invariably found growing on other mistletoes. An examination will reveal two characteristics which render it one of the most distinct and beautiful members of the mistletoe family. (1) The leaves are thin, woolly, and quite unlike the fleshy foliage of the common mistletoe. (2) The colour of the young shoots, flowers, and under surface of the leaves is a beautiful golden yellow. The fruits are small and semi-transparent, and the seed surrounded by a sticky substance characteristic of the family. I first found this species growing on a common mistletoe which was in turn growing on a hoop pine, and in a search extending over some weeks I found it living on its parasitic relations who had selected various forest trees for their hosts, including scrub box (*Tristania*), red gum (*Eucalyptus*), apple (*Angophora*), and forest oak (*Casuarina*)."

The specimen forwarded by Mr. Hayes proved to be *Notothiros sabaureus*. His remarks are borne out by observers in New South Wales and in Queensland. This species is quite common in the neighbourhood of Brisbane, but I have never noticed it attack any other plant than another mistletoe, a species of either *Loranthus* or *Viscum*.

Mr. Hayes's note led to an interesting discussion as to the relationship of the mistletoes and their hosts. Mr. R. Illidge stated that he had never noticed *Loranthus linophyllus* on any other trees than casuarinas or she oaks, and I may mention that I have never seen *L. pendulus* on any trees other than eucalypts; these are cases where close similarity exists between the foliage of host and parasite. On the other hand *L. congestus*, a broad-leaved species, though abundant in forest country on various trees, seems most partial to casuarinas. *L. longiflorus* is common in forest country about Brisbane, living on both native and cultivated trees; it is very common on the swamp mahogany (*Tristania suavelens*). *L. dictyophlebus* is abundant on the broad-leaved trees of the "scrub" or "rain forest" (jungle).

Some discussion arose as to the spread of the mistletoe other than by the Mistletoe Bird (*Dicaeum*), it being very evident that some of the larger fruited species, such as *L. dictyophlebus*, must be spread by larger birds. Other members taking part in the discussion were Mr. A. H. Chisholm and Mr. J. E. Young.

AN ENTOMOLOGIST IN THE INTERIOR.

(By A. JEFFERIS TURNER, M.D.)

PART II.*

My midday hours at Charleville were occupied in setting my captures, but in the evening I searched the lights of the town. Do not suppose that I startled the inhabitants by waving a net in the open streets. My methods were less obtrusive, and a few boxes and a piece of eard-board in my pocket my only apparatus. Opposite my hotel was the School of Arts. There I sat on the veranda under an acetylene lamp reading the *Sydney Bulletin*, but keeping an eye open for insects. The very first evening I took a fine pair of the curious hawkmoth, *Hoplionema brachycera* (Low), which is peculiar to the interior. On this lamp I also took six examples of an allied species, which I believed to be new†, and I took these hawkmoths only on this lamp and nowhere else. Later in the evening I strolled round the town. Fortunately there were no street lamps, but some of the shops were brilliantly lighted, and moths were thick on the window glass. Ostensibly an idler gazing on the goods behind the window, but really scrutinising the moths on the glass, it was easy for me to transfer any wanted specimen into my pocket without anyone, unless he had been watching me very closely, being any the wiser. In this way I took *Anthela reitoni* (Luc.), of which the type came from Charleville, and which I have received from Adavale. This species was redescribed by Mr. Lower, from Broken Hill, but as Lucas's description is quite unrecognisable by anyone who has not seen the type, now in the Queensland Museum, he is not to blame for that. I took also *Anthela asterias* (Meyr) (*uniformis* Swin., *callispila* Low, *niphomacula* Low).

It may be remarked that the naturalist who has seen this species only in a cabinet on a background of white paper may be struck by its *uniform* colouring; but, on the contrary, one who has seen it under a lamp on a dark night will be struck by the vivid *contrast* of its snow-white spots on a dark ground. As every artist knows, colour effects may depend much more on lighting and on contrast than on pigment.

Many Noctuids, together with some Geometers, Pyrates, and Mieros, were taken on these evening rounds. One shop-

*(For Part I. see July issue.)

†Since identified as *H. marmorata* Luc.

devoted to fruit and soft drinks was specially well lighted. Here I boldly entered, and while my order was being attended to, quietly pocketed one or more desired specimens, leaving the shop richer than the proprietor knew.

Although I kept my methods quiet they could not be unknown to everyone. One day my cabman came in with "a butterfly." I was surprised to find it to be that fine moth *Antheraea loranthi* (Luc.), not known hitherto from further inland than Duaringa. It is a male, smaller in size and paler in colouring than coastal specimens. Perhaps it represents a local race, but I think it may be a new species. My landlord also presented me with one of the *Boarmiadae*, which I had not taken myself, and have not yet been able to identify. Specimens so taken are chance captures, and convey little or no information as to the habits of the species; but collecting at light is certainly profitable, and sometimes a chance capture is of significance. For instance, I found an imperfect, dead specimen in the hotel, which turns out to be *Prasinocyma ocyptera* (Meyr). It was something of a puzzle why this moth was found only on the coast of southern Queensland and of middle West Australia. This capture indicates that, like *Boarmia penthearia*, it occurs in a belt right across the continent. Most Noctuids are taken at light, but an example of *Canthylidia eurhythmia* (Turn.), previously known only from examples sent by Dr. Hamilton Kenny from Gayndah, was taken about mid-day, quietly settled in a flowery field.

One might go on for a long time yet narrating the circumstances of particular captures, but I will only say that I left Charleville well satisfied, having taken ninety-one species of lepidoptera, many of them, especially among the micros, being new species.

By combining the named species from Charleville with those obtained from other inland localities, I have obtained a list which is printed at the end of this paper for the information of those specially interested. It contains nearly 200 species, but is still very fragmentary, fairly extensive in the Noctuidæ, but in the micros probably representing only a small percentage of the actual fauna. To record a local fauna with any completeness, it is necessary to live in the district for several years. It is interesting to compare my list with that compiled by Mr. Oswald Lower for Broken Hill, not a very favoured locality. After several years' residence he has compiled a list of over 600 species. Although this list may contain some errors, I believe it is substantially correct, and we may thank the author for the only inland local lepidopterous fauna based on continuous collecting.

The interior of Australia as conceived by the lepidopterist is a vast area comprising, I suppose, some four-fifths of the continent. Its limits are the western slopes of the dividing range, but on its borders coastal and inland species mingle over a wide stretch of country. To the south it reaches the coast on the shores of the Australian Bight. Of its western limits I know little, but imagine that they are analogous to those on the east. Along dry coastal belts, such as about Townsville and in North-west Australia many inland species may occur. Indeed the inland species being often migratory on account of climatic conditions, it is not surprising that they may visit many parts of the coast in dry seasons. If the interior comprises four-fifths of the continent, the coastal districts may be said to comprise four-fifths of the lepidoptera. Nevertheless, the interior fauna is richer than has been supposed. I divide its species into three groups, distinguished in the list given below by the letters a, b, and c.

(a) really comprises two groups which I am not able to distinguish from each other—(1) coastal species which have spread inland, and (2) species which are common to both regions, but often more abundant inland. These last are the section of the fauna which is particularly conspicuous to the casual observer.

(b) species, whose real home is in the interior, but frequently visit the coast, where they vary in numbers according to the season. It is not always easy to distinguish this group from the preceding, but it may usually be done. I include here, for instance, *Elodina padusa*, *Deilephila lineata*, *Ipanica cornigera*, and *Eremochroa alphisias*.

(c) the genera and species peculiar to the interior not found in coastal districts except as rare visitors. Here I include such genera as *Hopliocnema*, *Eremochroa*, *Nigusa*, and *Thalainodes*, and many species of genera of more general distribution.

The real object of this paper has been a general one—to show how much the study of any part of nature adds to the interest of life. There are many people who have no idea what an interesting world, and what an interesting part of the world, they live in. To dispel this ignorance is, I think, the main object of the Naturalists' Club. I also wanted to point out how imperfect is our knowledge of the living creatures found in Australia, and how readily anyone, especially anyone living at a distance from a capital city, can assist in increasing this knowledge.

In the following list the letters a, b, and c refer to the groups mentioned above; the numerals refer to localities as follows:—1 Charleville, 2 Cunnamulla, 3 Adavale, 4

Mitchell, 5 Roma, 6 Bourke, 7 Brewarrina, 8 McDonnell Ranges, 9 Musgrave and Everard Ranges; other localities are given by name:—

PAPILIONIDÆ.

Papilio sthenelus Macleay (b 1).

NYMPHALIDÆ.

Precis villida Fab. (a 1).

Pyrameis kershawi McCoy (a 1).

PIERIDÆ.

Catopsilia pyranthe Lin. (a 1).

Anaphacis jura Hb. (a 1).

Eloëdina padusa Hew. (b 1).

Terias similis Don. (a 1).

LYCÆNIDÆ.

Ogyris amaryllis Hew. (a 1).

Zizina labradus Godart (a 1).

Lampides boeticus Lin. (a 1).

Nacaduba biocellata Feld. (a 1).

SPHINGIDÆ.

Hippotion celerio Lin. (a 2).

Deilephila lineata Fab. (b 2 3).

Sphinx convolvuli Lin. (a 2 8).

Sphinx godarti Macleay (b 1).

Hopliocnema brachycera Low (c 1).

Hopliocnema marmorata Luc. (c 1).

SATURNIADÆ.

Antheraea engaea Turn. (c 1).

NOTODONTIDÆ.

Ochrogaster contraria Wlk. (a 1 8 9).

Epicoma argentata Wlk. (b 8).

LIPARIDÆ.

Lymantria reducta Wlk. (a 2).

HYPSIDÆ.

Nyctemera amica White (a 2).

Digama marmorea Butl. (a 1).

ANTHELIDÆ.

Aprosita obscura Wlk. (c 1 8).

Anthela rubicunda Swin. (a 9).

Anthela asterias Meyr. (b 1).

Anthela reltoni Luc. (c 1 3).

Anthela magnifica Luc. (a 2).

LASIOCAMPIDÆ.

Eremaea zonospila Low. (c 9), Eucla.

Porela notabilis Wlk. (a 6).

ARCTIADÆ.

Utetheisa pulchella Lin. (a 1 3 5 8).

Estigmene cosmeta Low. (c 6 7).

NOCTUIDÆ.

Cruria donovani Bdv. (a 1 5).

Ipanica cornigera Butl. (b 1 2).

Neoeleptria punctifera Wlk. (a 1 2 3 8 9).

Heliothis obsoleta Fab. (a 1 2 3 8).

Canthylidia moribunda Gn. (a 2).

Canthylidia eurhythmia Turn. (b 1).

Euroa radians Gn. (a 1 2 8 9), Coolgardie.

Agrotis infusa Bdv. (a 3 8).

Proteuxoa mniodes Low. (?) (c 5).

Proteuxoa paurogramma Low. (c 2 3).

Propatria mundioides Low. (b 6), Coolgardie.

Leucania cruegeri Butl. (a 1 2 3).

Sideridis diatrecta Butl. (a 5).

Sideridis loreyi Dup. (a 2 8).

Cosmodes elegans Don. (a 2).

Spodoptera erigua Hb. (a 2 5 8).

Hypoperigea tonsa Gn. (a 1 3 5).

Hypoperigea hamorrhanta Hmps. (c 3).

Namangana delogramma Turn. (c 6).

Paromphale vacca Swin. (a 3).

Eremochroa alphitias Meyr. (b 1 2 7 8).

Perigea capensis Gn. (a 3 5).

Prorenus tenuis Butl. (a 1 2 3 4).

Omphaletis florescens Wlk. (b 2 3), Coolgardie.

Omphaletis heliosema Low. (b 2 3 6).

Omphaletis nuna Gn. (b 6), Coolgardie.

Omphaletis melodora Low. (b 6).

Caradrina confinis Wlk. (a 2).

Caradrina paratorna Low. (a 6).

Eublemma parva Hb. (a 1 2 4).

Eustrotia amorpha Butl. (a 1 2).

Eustrotia opella Swin. (a 1 3).

Narangodes nigridiscata Swin. (b 3).

Micrapatetis icela Turn. (c 3).

Tarache nivipecta Butl. (a 1 3).

Tarache hieroglyphica Low. (a 2 3).

Tarache clerana Low. (a 1 2).

Amyna natalis Wlk. (a 2).

Pateta conspicienda Wlk. (a 2).

Calathusa dispila Turn. (a 5).

Earias huegeli Rogen. (a 1 3).

Earias parallela Luc. (b 1 2 3 5).

Earias ochrophylla Turn. (b 1 2 3).

Armaetia endoleuca Hmps. (c 3).

- Armactica columbina* Wlk. (a 1).
Armactica conchidia Butl. (a 3).
Acontia amata Wlk. (a 3).
Plusia argentifera Wlk. (a 1 2 5).
Donuca spectabilis Wlk. (b 2).
Niguza eucesta Turn. (c 8), Cobar.
Grammodes ocellata Tepp. (a 8).
Grammodes pulcherrima Lue. (a 2 3).
Mocis alterna Wlk. (a 2 8).
Chalciope hyppasia Cram. (a 2).
Prorocopsis euxantha Low. (a 1 3).
Prorocopsis stenota Low. (c 1 3).
Lynccestis amphix Cram., Tennant's Creek.
Diatencs aglossoides Gn. (b 2 8).
Diatencs ignepicta Low. (b 2 8).
Erceia sobria Wlk. (a 1).
Dasypodia cymatodes Gn. (a 2 3).
Dasypodia sclenophora Gn. (a 2 8).
Polydesma submurina Wlk. (a 8).
Tatorhynchus vinctalis Wlk. (a 2 8).

LARENTIADÆ.

- Chloroclystis laticostata* Wlk. (a 2 3 4 5).
Horisme peplodes Turn. (a 5).
Cidaria subrectaria Gn. (a 2).
Xanthorhoc sodaliata Wlk. (a 5).

ACIDALIADÆ.

- Eois costaria* Wlk. (a 1).
Acidalia desita Wlk. (a 8).
Acidalia rubraria Dbld. (a 1 2 3 5).
Acidalia lydia Butl. (b 1 2).
Acidalia optivata Wlk. (a 5).
Acidalia oppilata Wlk. (a 1 2 5).

GEOMETRIDÆ.

- Gelasma ocyptera* Meyr. (a 1).

BOARMIADÆ.

- Hybernina indocilis* Wlk. (a 5).
Ectropis excursaria Gn. (a 5).
Boarmia penthearia Gn. (a 4).
Cleora displicata Wlk. (a 1).
Thalainodes nessostoma Turn. (c 8).
Thalainodes allochroa Low. (c 8).
Harpagocnema ercmoplana Turn. (c 9).
Capusa graodes Turn. (b 2).
Ciampa arietaria Gn. (a 7).

PHYCITIDÆ.

- Homæosoma vagella* Zel. (a 1).
Plodia interpunctella Hb. (a 1).

- Croeydopora einigerella* Wlk. (a 1 5 9).
Tylochares eremonoma Turn. (c 3).
Tylochares goniosticha Turn. (c 9).
Trissonca ianthemis Meyr. (a 1).
Euzophora subareuella Meyr. (a 3).
Cryptoblabea oenobarella Meyr. (a 1).
Etiella behri Zel. (a 1 2 3 9).
Etiella chrysoporella Meyr. (a 1).
Selerobia tritalis Wlk. (a 1).

CRAMBIDÆ.

- Crambus euneiferellus* Wlk. (a 1).
Platytes idioptila Turn. (c 7).
Chilo ocellus Haw. (c 3).
Sedenia cervicalis Gn. (a 3).
Talis termia Meyr. (a 3).

SCHOENOBIADÆ.

- Styphlolepis agenor* Turn. (c 7).

PYRALIDÆ.

- Endotricha puncticostalis* Wlk. (a 1 2 3).
Herculia acerasta Turn. (a 5).

PYRAUSTIDÆ.

- Nymphula nitens* Butl. (a 1).
Voliba psammodessa Turn. (c 3).
Nacoleia mesochlora Meyr. (a 1).
Deuterarcha xanthomela Meyr. (a 2 3).
Hellula undalis Fab. (a 1 2 3 5 8).
Metallarcha phoenolis Turn. (c 3).
Loxostege affinitalis Led. (a 1 2 3 5 8 9).
Loxostege massalis Wlk. (a 1 3).
Conoprora triplex Turn. (c 3).
Seeliodes cordalis Dbld. (a 1 2 5 9).
Nomophila noctuella Schiff. (a 1 2 3 5 9).
Pyrausta phænicealis Hb. (a 2).
Eelipsiodes erypsirantha Meyr. (a 1).
Scoparia schizodesma Low. (c 9).

PTEROPHORIDÆ.

- Trichoptilus scythrodes* Meyr. (a 1).
Trichoptilus adelphodes Meyr. (a 1 2 3).

LIMACODIDÆ.

- Parasa rutila* Turn. (c 8).
Susiea collaris Wlk. (a 1).

COSSIDÆ.

- Xyleutes eremonoma* Turn. (c 2 8).

TORTRICIDÆ.

- Eucosma plebeiana* Zel. (a 1 3 5).
Argyroploce doxicastana Meyr. (a 1 5).

COSMOPTERYGIDÆ.

Pyroderces charisia Meyr. (a 1).

Pyroderces semnostola Meyr. (a 1).

HELIODINIDÆ.

Stathmopoda crocophanes Meyr. (a 1).

GELECHIADÆ.

Anacampsis simplicella Wlk. (a 1 5).

Slegasta variana Meyr. (a 1).

Gelechia desmanthes Low. (c 1).

Gelechia pyramidophora Turn. (c 3).

Platyedra gossypiella Saund. (a 1).

Catameces thiophara Turn. (c 3).

Cymatomorpha euplecta Meyr. (a 5).

Dichomeris cirrhostola Turn. (c 3).

XYLORYCTIDÆ.

Maroga unipunctana Don. (a 8).

OECOPHORIDÆ.

Eulechria encrypta Turn. (c 3).

Eulechria zorodes Turn. (a 3).

Machimia mesogaa Turn. (c 3).

Pachybela eremica Turn. (c 3).

Pachybela parisa Turn. (c 3).

Nephogenes epipercna Turn. (c 3).

Nephogenes stenoptila Turn. (c 3).

Nephogenes erebomorpha Low. (c 3).

Cosyra zanclostypa Turn. (c 3).

Cosyra gilvella Turn. (c 3).

Chrysonoma fascialis Fab. (a 2).

Philobota irruptella Zel. (a 4).

Eupselia satrapella Meyr. (a 1).

GLYPHIPTERYGIDÆ.

Glyphipteryx iometalla Meyr. (a 1).

GRACILARIADÆ.

Acrocercops irrorata Turn. (a 1).

Acrocercops heteropsis Low. (c 1).

Gracilaria pedina Turn. (c 1).

PLUTELLIDÆ.

Plutella maculipennis Curtis (a 1).

TINEIDÆ.

Erechthias acroleuca Turn. (c 1).

Bedellia somnulentella Zel. (a 1).

Monopis meliorella Wlk. (a 1 3).

Monopis ethelella Newm. (a 3).

Tinea ochranthes Meyr. (a 3).

Iphierga stasiodes Meyr. (a 3).

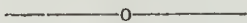
ADELIDÆ.

Nemotois sparsella Wlk. (a 1).

ERRATA.

Rhopalocera of the Jandowae district of the Darling Downs, by R. Illidge, *vide* Queensland "Naturalist" for July.

No. 1 should read *Danaida chrysippus petilia*, Stoll; and Stoll between 2 and 3 erased. No. 14, *Ogyris amaryllis mcridionalis*, Bethune-Baker. Bred from *Loranthus pendulus*, parasitic on Myall. No. 15, *Jalmenus dameli*, Semp. Omit *Atalantia glauca* and substitute common. No. 18, *Delias argenthona*, Fabr. Not common, larva seen on *Loranthus*; and omit W'house and common between 18 and 19. No. 19, omit common, var. with pink underwings and substitute garden only. No. 20, omit McLeay and substitute Fabr. No. 22, omit rare and substitute common, var. with pink underwings. No. 23, omit rare and substitute common. No. 24, add larva seen on *Atalantia glauca*. No. 25, strike out plentiful and substitute rare.



SYLLABUS.

NOVEMBER-DECEMBER, 1921.

November 7th.—Combined microscopical and entomological evening.

November 12th and 13th.—Burleigh Heads. Train leaves Melbourne street, Saturday, 1.55 p.m., returning South Brisbane Sunday evening, 8.10 p.m., or Monday morning, 9.43 a.m.

December 12th.—Lecture by Dr. H. I. Jensen.

December 26th-January 1st.—Macpherson Range, National Park. Particulars to be published later. Those intending taking part in the excursion are asked to communicate with the Hon. Secretary as soon as possible. It is hoped after the return of members from this, the third trip of the Club to the National Park, to bring out a special issue of the *Naturalist* devoted to that area.

The Queensland Naturalist.

THE ORGAN OF THE FIELD NATURALISTS' CLUB
AND ITS BRANCHES.

VOL. III.

FEBRUARY, 1922.

No. 3.

PROCEEDINGS.

October to December, 1921.

October 17.—Visitors included Mr. H. C. Raven, of the American Museum of Natural History, New York, who was welcomed by the President, Mr. Chisholm. Mr. W. R. Colledge gave an illustrated address dealing with certain phases of pond-life in the Brisbane district. Mr. J. E. Young showed lantern slides relating to Mount Lindsay and district, and remarked on the confusion of names that had arisen since Alan Cunningham's day. Specimens of various kinds were shown by Dr. Jefferis Turner, Mr. Hainsworth, Mr. C. T. White, and Mr. N. V. Agnew, and a series of lantern slides showing the Pale-yellow Robin (*Pacilodryas capito*) at home was submitted by the President.

November 7.—The President detailed briefly the circumstances surrounding the passage of the new Animals and Birds Act, which had passed the State Legislature in the last hour of the session, and which he regarded as the best measure of its kind in Australia. It was agreed to congratulate the Minister for Agriculture (Hon. W. N. Gillies) and the Under Secretary (Mr. E. G. E. Scriven) for their work in regard to the measure.

Mr. C. T. White (Government Botanist), who had recently married another member of the Club, was, together with Mrs. White, presented with a dinner service. The President, in making the presentation on behalf of the Field Naturalists' Club and the Gould League of Bird-lovers, pointed out that Mr. White was on the Councils of both bodies, and was a past-President and past-Secretary of the Club, while Mrs. White was a consistent worker in the Club's interests. Messrs. Colledge, Tryon, and Longman supported the felicitations, and Mr. White suitably replied.

A paper on "Insects Affecting the Wattle Trees" was read by Mr. R. Illidge, and instructive exhibits were shown by Mr. Illidge, Dr. Shaw, and Mr. Longman.

November 29.—A special meeting to hear Mr. H. H. Baker, of Messrs. Watson and Sons, Brisbane, lecture on "The Human Eye and the Microscope." The lecturer dealt with his subject closely, and was accorded a vote of thanks.

December 11.—Lecture by Dr. H. I. Jensen, Queensland Geographical Survey Department.

Excursions.—A very pleasant week-end excursion was held to Burleigh Heads (South Coast) during November, and the Christmas-New Year trip to the National Park of the Macpherson Range was again inaugurated. The success of the latter excursion was marred by consistently wet weather. Despite this, about a dozen members walked from Kerry to the Roberts Plateau, about thirteen miles, spent two days there, and walked down again. Some added ten miles to their walk by tramping in to the railway from Kerry.

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TRANSACTIONS.

A WONDERFUL ROTIFER.

By W. R. COLLEDGE, Brisbane.

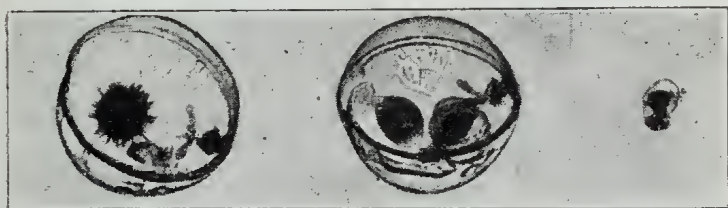
A curious and rare Rotifer is occasionally glimpsed in Brisbane. A few days, in the course of one or two years, are the only opportunities given to the student of this unique creature. Like the most of its genus, it is too small to be seen by the ordinary human eye; and a thousand might be swallowed in a glass of water without any indication of their presence to the thirsty soul. Its classical and only name is the *Trochosphaera equatorialis*. It was first seen by Professor Semper in the Philippine Islands, and again, forty years ago, by Surgeon Gunson Thorpe, in Brisbane, and, as far as I know, in no other place.

It is a tiny globe whose walls, as transparent as a soap-bubble, display to the observer all its internal mechanism. A narrow muscular ring is thrown around the middle, and imbedded in this a continuous row of cilia. These move with wonderful rapidity, imparting a graceful rolling motion to the creature, and at the same time propelling a current of water along a channel running round the muscular ring. This current bears little floating particles towards the mouth, where they are passed to a tiny pair of jaws, which open and close with great regularity.

The esophagus is a small tube leading to the stomach and intestinal canal. These organs are hung loosely suspended in the centre of the globe, the end of the bowel only being attached at the anus, and here and there a tiny muscular thread ropes the organs to the body-wall. The ovary, scarcely visible in the young, appears afterwards as a ribbon-like tissue attached closely to one side, just below the muscular ring. Little circular ova appear and mature in the inside in a few days, and pass out as tiny representatives of the family.

Towards the close of their brief season a large resting egg begins to appear in many of the females. It is much larger than the ordinary ones, very thickly coated, and armed with stout, thorny spines. It cannot be ejected, but remains until the mother dies, when it drops down and becomes imbedded in the mud. There it lies during the

TROCHOSPHERA EQUATORALIS.



Females; One with Spiny Egg
(Magnified 45 times)

Male
(Magnified 50 times)

[Photo by W. R. Colledge.]

winter months, and in the succeeding summer, when the temperature is high and other conditions favourable, new members of the family arise.

Though the female is rare, the male is much more so; indeed, this is characteristic of the group. The "ladies" are the dominant factors of their State. There is no need of unions or the fervid oratory of a suffragette for establishment of female rights; the male is a wee, insignificant creature, and, metaphorically speaking, can hide in a fold of his wife's petticoat and escape observation.

A great many of the males of the species are absolutely unknown. With a few exceptions, they are not even provided with a stomach; all their sustenance is the original energy with which they are endowed at birth. This carries them on until they pass into the unseen.

The lord of the Trochosphaeras is a little, humpbacked, pyriform being, with two little red eyes peeping through a ragged circle of cilia around his head, and about one-twentieth the size of his queen.

A QUEENSLAND RABBIT-BANDICOOT.

By HEBER A. LONGMAN, Director, Queensland Museum.

Through the kindness of Mr. J. Horsington, of Bulgroo Station, *viâ* Adavale, a specimen of the Rabbit-Bandicoot, or Bilbi, was forwarded alive to the Queensland Museum in October last.

This curious little marsupial has been popularly regarded as a freak—a hybrid between a Rabbit and a Bandicoot, which would be, of course, an utter impossibility. But its long and elegant ears are the only character which could be considered rabbit-like. Anatomically, it is a specialised Bandicoot, and it belongs to the Peramelidæ. Its snout is elongated, like that of the long-nosed Bandicoot, and it is also a great burrower. Indeed, the services of two men were necessary to dig out this Bilbi, which was kept as a pet at Bulgroo Station for some months before Miss Horsington brought it to Brisbane.

This beautiful little marsupial is about the size of our common Bandicoot. Its silky hair is blue-grey above, whilst the under surface of the body is white. The long ears, which are almost naked, can be erected in varying positions, but often hang drooping. The tail is long, dark basally, and has a prominent white crest above on its terminal portion. This crested tail was prized by the aborigines for decorative purposes, and, judging from the numbers they obtained, the Bilbi must have been common in some districts.

Like the Kangaroo, the Bilbi is able to jump forward on its hind legs, but when moving slowly the fore limbs are also used. Two of the toes on the hind feet are small and closely associated, forming the typical marsupial syndactylism. Being a nocturnal animal, it spends most of the day-time curled up in a box. Should grasshoppers or beetles be placed in its case, then the Bilbi becomes alert. In catching a grasshopper it seems to be guided almost entirely by its keen sense of smell. After crushing the insect with its jaws, which, unlike those of herbivorous marsupials, are armed with sharp canine teeth, it uses its fore paws to hold its prey. The long lower jaw is attenuated in front, and presents a curious appearance when a large grasshopper is being munched. The Bilbi has lived for over three months in the Museum, to the time of writing, feeding on milk daily, with occasional insects, and it also devoured a dead mouse. In its natural state it is said to feed mainly on beetle larvæ found in the roots of an *Acacia*.

Up to the present, four species of Rabbit-Bandicoots have been described. The original species, *Thalacomys*

lagotis (Reid) is found in West Australia. *T. sagitta* Thomas, known as Urgarta, is a South and Central Australian form. Professor Sir Baldwin Spencer described smaller specimens from Charlotte Waters as *Peragale minor*, whilst *Peragale leucura* Thomas, whose actual habitat is unknown, is thought to have been collected in Central or North-Central Australia. The generic term *Peragale*, Gray, is antedated by Owen's *Thalacomys*. Until a detailed examination is made of the skull of our specimen, it would be unwise to define its specific position, but it is closely related to Spencer's *T. minor*. Specimens from Surat and from Cunnamulla have been previously recorded in the Queensland Museum registers.

A study of a skull shows a big development of the olfactory fossa, or fore part of the cerebral chamber containing the olfactory lobes of the brain, from which nerve-branches pass out to the nose through surprisingly large openings in the cribriform plate.

ORCHIDS OF A SUBTROPICAL HIGHLAND.

By (Miss) HILDA GEISSMANN, Tambourine Mountain.

[The author of this article is one of our country members, resident at Tambourine Mountain, and a close student of the wild-flower flora of that botanically very rich locality. Queensland possesses about 160 species of named Orchids, and of these about 100 are epiphytic species and about 60 terrestrial ones. This State does not possess the wealth of ground orchids characteristic of the Southern States, but, on the other hand, with the exception of one or two species in the Northern Territory and a few in New South Wales, practically all the Australian species of epiphytic ones (those that grow on trees and rocks) are found in Queensland. Miss Geissmann lists twenty-one epiphytic sorts and ten terrestrial ones, a total of thirty-one species. (For the most part, the vernacular names are her own, and quite appropriate). In addition, there are four species of which she has not yet been able to ascertain the botanical names, and these are not included in the present list.—Eds.]

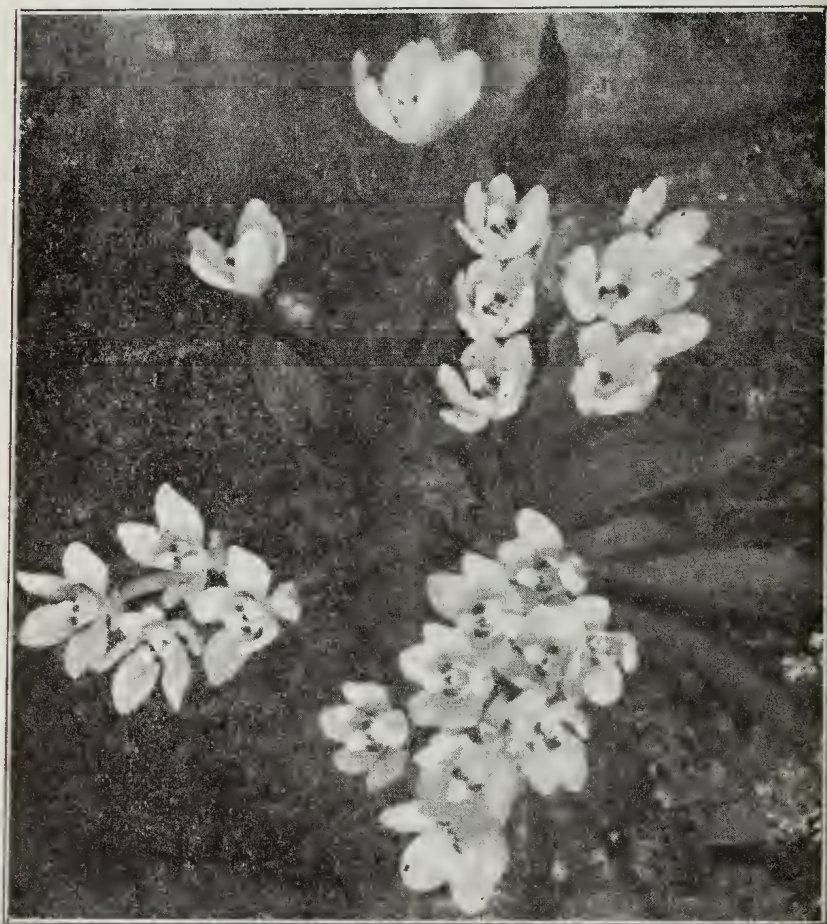
ARBOREAL OR ROCK ORCHIDS.

ROCK LILY (*Dendrobium speciosum*).—Large stiff plants, found on trees and rocks. Long sprays of creamy flowers. Blooms in September.

SHELL PINK ORCHID (*Dendrobium Kingianum*).—Found on the ground between rocks around open waterfalls and on creek banks. Has sprays of delicate pink flowers. Curious habit of propagation—forms new plant at the end of stems, which drops off when strong enough and grows by itself. Flowers in September.

WHITE FEATHER ORCHID (*Dendrobium æmulum*).—Common on Box (*Tristania conferta*) trees. Upright growth. White feathery flowers turning pink as they fade. Blooms in September.

TONGUE or BUTTON ORCHID (*Dendrobium lingæforme*).—Grows best on sandstone; also found on basalt



Orange-blossom Orchid (*Sarcophilus falcatus*) growing on Wattle-tree.

[Photo by Hilda Geissmann.]

rocks and trees in open forest land. Small button- or tongue-like leaf, flat on the rock. White bloom similar to *D. æmulum*.

SPIDER ORCHID (*Dendrobium tetragonum*).—On trunks of trees, drooping growth; easily told by its four-angled

stems, with tuft of leaves at the end. Quaint brown flowers, sweet-scented. Flowers in September and October.

PENCIL ORCHID (*Dendrobium teretifolium*).—Long drooping plants found on trees. Slender pencil-like leaves, often attaining a great length, with sprays of green-brown flowers. Blooms in September.

SMALL PENCIL ORCHID (*Dendrobium Mortii*).—Like *D. teretifolium* in habit but smaller; lemon-scented, yellow flowers on trees and rocks. Blooms in September.

FLUTED ORCHID (*Dendrobium Beckleri*).—Found on trees and rocks. Fluted, column-like leaves, with upright growth. Delicate pale-green flowers.

YELLOW SPECKLE ORCHID (*Dendrobium gracilicaule*).—Found on trees and rocks; thin stems with leaves on top. Sprays of yellow flowers spotted with brown. Sweet-scented; blooms in September and October.

LILY OF THE VALLEY ORCHID (*Dendrobium monophyllum*).—Grows in a mass on trees or rocks. Flowers like its namesake, but yellow. Blooms at any time.

RAVINE ORCHID (*Sarcophilus Fitzgeraldi*).—Grows in fern-like masses on mossy stones. Only found in shaded ravines and gorges. Sprays of beautiful flowers; white with pencilled markings in pink, brown, and yellow. Blooms in October.

ORANGE-BLOSSOM ORCHID (*Sarcophilus falcatus*).—Found on Wattle (*Acacia*) and Rosewood (*Dysoxylum*) trees. Seythe-like leaves of pale green. Has sprays of pure-white flowers with yellow centres. Rich, delicious scent. Blooms in October.

RASPY-ROOT ORCHID (*Sarcophilus divitiflorus*).—Found on scrub trees. Long rasp-like roots; rough dark-green leaves. The flower spray is a feathery plume of gold and brown, formed of many small flowers. Blooms in October.

LAWYER ORCHID (*Sarcophilus parviflorus*).—Found chiefly on lawyer-vines and small twigs. Bears lovely sprays of sweet-scented flowers, greenish yellow (olivaceous) in colour. Blooms in October.

FAIRY BELLS (*Sarcophilus Ceciliae*).—Tiny clumps of brown-green leaves growing on rocks. Delicate spikes of pale-pink, bell-like flowers with a faint perfume. Blooms in January.

TANGLE ORCHID (*Cleisostoma tridentatum*).—Found in mid-air with one root attached to a small twig. This small tangle of roots and leaves is more often scented than seen. Its flowers are minute green things, with a rich delightful scent that fills the air. It flowers in September and October.

CREeping ORCHID (*Bulbophyllum exiguum*).—Found on tree-trunks in masses. Tiny bulbs with one leaf at top.

When in flower the plants seem wrapped in a white mist. The flowers are like tiny white bells on thread-like stems, and are sweet-scented. Flowers any time of the year.

RED-EYE ORCHID (*Bulbophyllum bracteatum*).—Small fleshy leaves of pale green, growing in masses close to trunks of trees. Tiny red flower against plant, with a short, fat pseudobulb.

GRASSY ORCHID (*Cymbidium suave*).—Often found in hollows of dead trees; grass-like leaves and long stems of yellow flowers. Blooms in September.

SHE-OAK ORCHID (*Cymbidium albuciflorum*).—Found largely on she-oak (*Casuarina*) trees and also on dead trees. Bulb-like stem and shiny, palm-like leaves at top. Long sweet-scented stems of olive-green flowers. Handsome seed-pod of brown and green.

OLIVE ORCHID (*Cymbidium canaliculatum*).—Similar to She-oak Orchid, but the bulbs more fleshy and it loves moist scrub trees to grow on. Flowers greeny yellow on drooping stems.

GROUND ORCHIDS.

SCRUB LILY (*Calanthe veratrifolia*).—Grows along creek-banks. Broad green leaves and long fleshy roots. Flowers carried on tall straight stems. 2 to 3 ft. high, crowned on top with bunch of white flowers, which blacken when touched. A lovely decorative plant.

CANARY ORCHID (*Diuris sulphurea*).—Found in grassy places. A spike of quaint flowers, yellow and brown, shoot up from a bulb several inches beneath the ground. Flowers in September.

BELL ORCHID (*Gastrodia sesamoides*).—Deep creamy-brown stalk of bells, with a papery rattle when shaken. Grows from a bulb of the same colour. Likes the border of scrub and grass land. Appears in September and October.

SPOTTED MAROON ORCHID (*Dipodium punctatum*).—On the edge of grass-land these maroon flowers come. The flowers are carried high on stem 2 to 3 ft. long. Blooms in December.

"PINKIES" (*Caladenia carnea*).—These bright five-petalled little things love the grass-land and have a grass-like leaf springing from a small round white bulb. They come to bloom in September.

HORNED ORCHID (*Pterostylis reflexa*).—These are found in June in the shaded undergrowth, coming up from a tiny bulb; they have long leaves right up the flower-stem. Two horns (the points of the lateral sepals) on

either side of the brown bonnet-like flower give the plant its local name.

GREEN-HOODS (*Pterostylis nutans*).—Found in grassy places, these little green flowers spring from tiny bulbs. One leaf comes like a minute waterlily leaf and then the flower-stem. Shaped like a Horned Orchid, but is smaller and has no horns. Blooms in September.

PIXIE-CAPS (*Acianthus cersertus*).—These quaint flowers love shady scrub (rain-forest) borders. They have one leaf and a spike hung with tiny caps of brown. ("Fairies' Hat-racks.") They come in September.



"Pinkies"—*Caladenia carnea*.

[Photo by Hilda Geissmann.]

CRADLE ORCHID (*Corysanthes bicalcarata*).—In the shade of Bracken (*Pteris aquilina*) and Blady Grass (*Imperata*) these little white cradles, each with a purple lining, rest on their green leaves. Just one leaf, oval in shape, and one cradle-like flower on each leaf, come from the wee round bulbs. Comes in May.

CLIMBING ORCHID (*Galeola* sp.).—This grows in open country and is a leafless orchid putting out a long creeping shoot. This climbs the nearest tree, clinging by small rootlets, and then the buds shoot from this stem. Olive-green flowers on stems 3 or 4 in. long hang from the main stem. Blooms in September.

FURTHER NOTES ON MISTLETOES.

By H. C. HAYES, Kyogle, N.S.W.

With reference to the article on Mistletoes in the last issue of the "Queensland Naturalist," I may say that I have recently been studying the relationship of Mistletoes and their hosts, and during my wanderings in the surrounding country have noticed some peculiar and puzzling things. Just as I thought I had got together a formidable array of facts, and had established something definite, I would happen upon some vagary of this family, which would upset everything, and I would have to start all over again.

For instance, one would hardly expect to find two species, *Loranthus pendulus* and *L. linophyllus*, joined together and growing on a Grey Gum (*Eucalyptus propinqua*), but an instance of this can be seen in this locality (Kyogle, N.S.W.). *L. linophyllus*, though very partial to Casuarinas, will also attack the Lillypilly (*Eugenia Smithii*). I also noticed two fine specimens of *L. pendulus* growing on an Apple (*Angophora*).

To me my most interesting discovery was in connection with that very distinct species *Notothixos sabaurens*. I was gratified to find this species growing on *L. pendulus*. As stated in Mr. White's article, this species will not attack any plant other than another Mistletoe, and hitherto I have never seen it growing on any but a broad-leaved species.*

A species of very distinctive appearance, and easily recognisable because of its glossy dark-green leaves, which are hard and somewhat tough, and with a venation much more distinct than in any other member of the family, is *Loranthus dictyophlebus*. Perhaps the most distinctive thing about this species is its striped, egg-shaped seeds, which are not surrounded by a mass of sticky matter so characteristic of this family, but have, as a rule, only a thread of sticky matter attached to the base of each seed. Each of the pale-green seeds is made up of six sections, as in the manner of some capsules, and are slightly ridged.

The fruits, which are a beautiful orange colour, are borne in clusters along the main branches, and closely resemble the fruits of the host-tree (*Eugenia Smithii*), on which I found it. The bark of this parasite was the same colour as that of the host. The leaves when crushed have a peculiar and unpleasant smell.

* We have noticed it growing abundantly on *L. linophyllus* on Swamp Oak (*Casuarina glauca*) trees along the Brisbane River.—Eds.

FROM A BUSH WINDOW.

By Mrs. F. H. HOBLER, "Kilrook," Jandowae.

Bird life! Yes, we of the bush see it daily, and some of us—later all, I hope, as the love of Nature study grows stronger—watch it with wondering eyes. Now, as I sit by the open window, the small birds' calls are pre-eminent.

First a pair of Welcome Swallows (*Hirundo neoxena*) flit to and fro, both busy carrying insects to the two now fully fledged babies who but yesterday left their secure mud nest, so beautifully lined with the softest of feathers collected from the fowl-yard, and built high up under the window-shade on the eastern side of the house. What worry it was to the parents when one babe, so full of confidence and thought to see the world, fluttered almost helpless into the tiny wheat-patch near by! His life might have quickly ended but for the fact that the sixteen years of the eat rendered him indifferent to the little cries of distress. This morning both young birds have gained confidence, and are now perched on the highest point of the grape-vine trellis, while the devoted parents dart hither and thither in search of food.

Now the call of the Pardalote ("chip-chip") comes to me, and I see him busily hunting along the veranda eaves, probably for a hole in which to build—for creek-banks are scarce in this flat country. Last spring a pair of Pardalotes (*Pardalotus melanocephalus*) espied a large auger-hole in a stump in which grew a great cluster of mignonette, and at this they were busy for some days, then deserted. Seeking the reason, I found a green frog had taken possession, and his bulky body quite filled the passage-way. I remember that once a Pardalote tried to enter an old nest of the Fairy Martin (*Petrochelidon ariel*), but was caught by its head, and, alas! when found was cold and stiff. So even in the lesser life there is tragedy.

I listen now to the ceaseless twitterings of the tiny Tufted Lark, of which I do not know the name.* It is under the shade of the lemon-tree. First there is a call not unlike that of the common Ground Lark (*Anthus australis*). Then it breaks into songs which might easily be mistaken for a Canary's; indeed, it has several calls and apparently seldom tires, for I hear it constantly through the night. At daylight their numbers increase, but the notes are intermingled with those of many others of the feathered race. One tiny nest I found contained five delicately marked eggs, the nest being, very similarly to that of the Pipit,

* Probably the Bush Lark, *Mirafra*.—Eds.

concealed under a tussock of grass. A few days ago I found a nest of the latter bird, with two fat young ones almost ready to move out.

A harsh note now breaks in from the Butcher-bird (*Cracticus destructor*), well known as Jacky. He sits on some bean-sticks and scolds—a saucy bird and one who has a great fancy for tiny chickens. I'm afraid I have had many shot, and mostly as they danced nimbly after a chick that had run out of the coop and from its mother's protecting wings. Jacky is well worth some attention for his cleverness. Once, when in the Central district, and bent on getting some sphinx moths that hovered round a honeysuckle creeper at dusk, I found that Jacky often got in first, and with his catch would fly away to his nest in some high brigalow trees. Later, I found him busily inspecting the honeysuckle and taking from the twigs green caterpillars of the sphinx tribe. It was during a mouse plague that we learned to appreciate Jacky, as for most of the day he and some fellow-workers could be seen flying down among the garden plants, and mice were soon seen on the railings and wire-netting—evidently put there to "ripen" for future use. Later on, when the apricot tree shed its leaves, we were able to account for a former objectionable smell; skeletons of mice were to be seen in every available fork.

The familiar Shepherd's Companion (*Rhipidura motacilloides*), of course, is not absent from the garden. In one of the large Pepperina trees near-by the mother bird is patiently sitting on her eggs, the second lot in the same nest. The first family was left very early to fend for themselves, their rusty-brown colour and the white mark on the head showing their youthful stage. In the same Pepperina the Magpie-Larks have two strong mud nests, and out on a further limb the beautiful little black and white Shrike* has its tiny cobweb nest built across a fork. Last summer also a pair of these birds—maybe the same two—built in this tree. In another Pepperina tree close by can be seen a nest of the "Grinder" (*Seisura inquieta*), and though these birds are shy they are often about the garden and buildings, much like the Shepherd's Companion. Nor is this the first season they have bred here.

These different birds, all seeking the close vicinity of the homestead, are secure in their belief of the kindness of mankind and in the knowledge that their hated foe, the "goanna," seldom, if ever, visits the locality. Even should one of these reptiles venture so close, the long teeth of the half-bred cattle-dog quickly ensure the safety of the wonderful little homes built so high among the swaying boughs.

* White-shouldered Caterpillar-eater, *Campephaga humeralis*.—Eds.

A few hundred yards away stands a patch of myall trees (*Acacia pendula*), where at breeding-time bird-life is very plentiful; and, as I hunt about for the larvæ of the beautiful little butterfly *Ogyris Amarylis*, the Magpie-Larks raise their warning cry. Various Wood Swallows, too, utter cries of distress as I look into a nest built in a low fork in the trunk of the tree, and find either young birds or eggs. High up in thin boughs a Miner has its nest, and further on hangs a neat, compact nest of one of the larger Honey-eaters. A tiny red and black bird† flutters in that bunch of mistletoe, but its home is not to be found. Now the harsh note of the Crow is heard as he flies overhead—the hated and evil one of all birds, for whom no bushman has time or sympathy.

If it be a time of drought, sheep rendered weak by starvation fall an easy prey to the black demons, whose wings flap the animals' heads till they fall in stupor to the ground, when one or both eyes are the toll. Or if the sheep in its weakness seek the most boggy part of the dam—and what weak sheep does not?—again there is the forfeit of the eyes. When performing Nature's duty of bringing forth young the ewes are unable to rise owing to wet, heavy fleeces, &c.—and who in the bush has not seen the horrors performed by the black bird, both on mother and offspring—bodies torn open while life is still very strong! Granted the Crow does good in helping to keep down the fly pest, it is also partial to the farmyard eggs and chickens.

But why dwell on the sordid side? For one bird whose ways are detestable there are one hundred others for whom nothing but affection can be felt. The bush indeed would be a drab place without them.

—o—

INSECTS OF THE WATTLE-TREES.

By R. ILLIDGE, Bulimba.

Insects that affect the various species of *Acacia* are very numerous, all orders being well represented.

Lepidopterous larvæ, particularly amongst the moths, feed on the foliage and flowers, and in the stems and roots many, of very large forms, such as *Xyleutes*, exist for a considerable time, doing such damage as to greatly weaken the tree. In the smaller branches and stems of trees of moderate size, *Xyloryct* larvæ (*Maroga*, *Cryptophasa*, and others) make burrows, some ringbarking round the part

† Mistletoe Swallow, *Dicaeum hirundinaceum*.—Eds.

wherein they live and subsisting on the bark and sappy matter, others drawing in leaves for food under a canopy made of silk and fragments of matter, including their own dejectamenta. The moribund state of the tree induced by these depredations is still further increased by the attacks of other insects, as Coleoptera, which lay their eggs about the damaged parts and thus obtain a footing. Many scale insects also add to the trouble.

What had been a fine specimen of *Acacia Baileyana* growing in my garden lost all its top branches, and being no longer ornamental was cut down and stump and roots dug out. From the roots six large grubs of *Xyleutes eucalypti*, about $4\frac{1}{2}$ in. long and $\frac{3}{4}$ in. in diameter, were obtained. In the stem and branches numerous larvæ of *Maroga unipunctana*, also those of various weevils, longicorns and others, were found. The *Maroga* and weevils are deadly pests, for the first ringbarks, causing the stem above to die, and the weevil larvæ (*Chrysolophus spectabilis*) make numerous burrows. The twigs also were considerably affected by cottony cushion scale. A bonfire was made of the lot, with other rubbish.

The larvæ of several pretty butterflies feed on the foliage and flowers, and in the latter case may be inimical in preventing formation of seed-pods.

However, the Wattle is a hardy tree, and thrives under conditions most adverse. Many kinds are beautiful in appearance, and, when laden with their masses of golden bloom, diffuse an aroma unequalled for fragrance. It is indeed worthy to be the National Flower.

LONGICORN COLEOPTERA OF THE WATTLES, BRISBANE DISTRICT.

The long-horned beetles herewith noted number 24, but of these three species, Nos. 10, 22, and 23 are of doubtful occurrence, while two or three also affect quite different plants, as No. 14, which is likewise found in small stems of young *Casuarina* saplings.

FAMILY CERAMBYCIDÆ.

Sub-family Prionides.—1, *Seeleoeantha glabricollis*.

Sub-family Cerambycides.—2, *Xystrodera virescens*; 3, *Paehydissus serieus*; 4, *Phoraeantha fallax*; 5, *Didymoeantha obliqua*; 6, *Piesarthrius marginellus*; 7, *Uraeanthus* sp.; 8, *Stephanops nasuta*; 9, *Phalota tenella*.

Sub-family Lamiides.—10, *Probatodes piliger*; 11, *Hebeerus crocogaster*; 12, *H. marginicollis*; 13, *H. niphonoides*; 14, *Symphyletes albocinctus*; 15, *S. pulverulens*; 16, *S. variolosus*; 17, *S. vicarius*; 18, *Penthea pardalis*; 19, *P.*

solida; 20, *Rhytiphora rubeta*; 21, *Ropica exocentroides*; 22, *Sybra acuta*; 23, *Ameipsis marginicollis*; 24, *Rhytiphora polymita*.

In the sub-family Prionides only one species, so far, has been bred out, and that is rare about Brisbane. It is *Sceleocantha glabricollis*, of which perfect examples were obtained at the base of a large *Acacia cunninghamii*, the wood so hard that it blunted the tomahawk. Two larvæ were also cut out; these shortly pupated in the receptacles in which placed, of which one emerged perfect, the other crippled.

Of the Cerambycides, many of which are amongst the most elegant of beetles, eight species have been bred, none of which is pretty, though *Xystrocera virescens* has a silken sheen, especially when fresh. The male *Piesarthrius marginellus* has curious fan-like antennæ. *Xystrocera* is one of the species which was found in *A. Baileyana*, but is most abundant in the creek-side wattle, *A. linifolia*, and also *A. decurrens*. The larva of *P. marginellus* cuts off the branch, as if with a keen knife, just above its burrow, and then plugs up the hole. Occasionally, it makes a mistake and cuts itself off below, and hence falls to the ground.

No. 7, *Uracanthus* sp., acts precisely as *Piesarthrius*. *P. fallax*, the only species of the genus *Phoracantha* I know of that attacks the wattle, together with the other Cerambycides on the list, is usually found in considerable numbers in the main stems, or in the branches, though each works in a separate burrow.

Amongst the Lamiides, *Penthea pardalis* and *Penthea solida* are found in the roots close to the base of tree. The female beetle triturates the bark and lays its eggs therein. *Rhytiphora rubeta* bores the main stems and larger branches and causes a swelling of those parts, and *R. polymita* is found in the stems of a small species of wattle. *Symphyletes* does the same, except that no swelling is noticeable.

The wattles most prolific of beetle life are the true leaf-bearing forms as *Acacia decurrens*, and of those bearing dilated petioles (phyllodia). *A. linifolia*, *cunninghamii*, and *longifolia*.

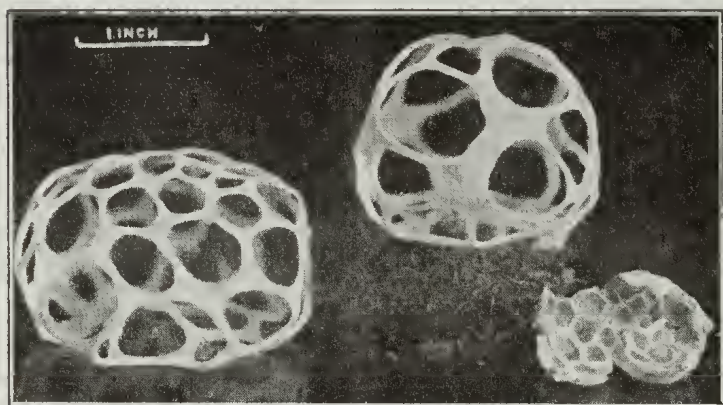
The list must not be taken as complete, for no doubt there will yet be found many others of which it is the host plant. Many species have been taken off the tree, but this does not mean that it constitutes the food plant of their initial stages as larvæ.

Numbers of small larvæ, when perforating the bark soon after emergence from the ova, cause a flow of gum through the tiny hole, which frequently results in their death ere they can do any further harm. In other insects

—as, for instance, the Psyllid of the Moreton Bay fig—the gummy secretion may constitute the aliment, as also protection from other insects, certainly the latter.

NET FUNGI.

Among the more curious of fungi are the various species of the genus *Clathrus*, popularly known as Net Fungi. One of the commonest is *Clathrus gracilis*, and



Net Fungi, *Clathrus gracilis*.

[Photo by Ethel Caswell.]

the, accompanying photograph, by Miss Ethel Caswell, gives a good idea of the plant.

Net fungi belong to the large group Phalloideæ, or Phalloids, and the name is derived from the Greek name for lattice or grating.

In its younger stage the fungus is contained in an egg-shaped or more or less globular volva. This stage is common to all phalloids, and is known as the egg stage. As the volva bursts the spore-bearing portion or receptacle expands and enlarges into a beautiful, delicate net. On the inner face of the meshes, particularly the upper ones, is borne a brown liquid, foetid coating—the gleba—which carries the spores. Carrion-feeding insects such as flies are attracted to the gleba by means of its foetid odour, and flying away carry the spores with them, thus distributing the species.

We are particularly pleased to publish Miss Caswell's photo., as C. G. Lloyd, in his "Synopsis of the known Phalloids," states that "notwithstanding that *Clathrus gracilis* is the most common phalloid in Australia, we know of no photo. of it."—C. T. WHITE.

The Queensland Naturalist.

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PROCEEDINGS.

January to March, 1922.

March 6.—This occasion marked the first combined meeting of the Queensland Naturalists' Club and the Gould League of Bird Lovers, members of both bodies having voted in favour of the two bodies working in conjunction under the names of the Queensland Naturalists' Club and Nature-Lovers' League. The meeting was also the annual meeting of both bodies, the retiring President of which (Mr. A. H. Chisholm) presided at the outset and welcomed His Excellency the Governor (Sir Matthew Nathan), who, as Patron, took the chair.

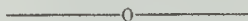
Speaking in reference to the broadening of the aspects of the two societies, the Governor said: "Just as one loves the birds the better in their natural surroundings—animate and inanimate—so will the enjoyment of studying them be increased by studying these surroundings at the same time." His Excellency went on to say that the pleasurable excitement of going to a new country was enhanced if it was one with new flora and fauna, and he had derived great pleasure, when journeying about Queensland, from trying to pick up some knowledge of the different trees, flowers, grasses, animals, and birds. The Governor spoke of his experiences in other lands, and made some breezy comments on the animals and larger birds of Australia. "While," he added, "like every other newcomer, I have got to know a few of the bigger birds, I am hoping always to increase my knowledge in the same way that I have acquired the little I have—going about the country on the lookout for something alive, and taking advantage of the science of the birdlovers whom I meet."

The annual reports and financial statements of both bodies, tendered separately, showed a healthy condition of affairs, and they were adopted, together with a motion associating the two bodies. It was pointed out that the scope of the Birdlovers' League has been widened, and

henceforth it is to include other branches of nature study. It will continue to work among children, while the Naturalists' Club will accommodate adults in all parts of the country.

Officers were elected as appears on the cover-page of this issue of the *Naturalist*.

As a Presidential address, Mr. Chisholm lectured on the History of Ornithology in Queensland. The subject was dealt with in detail, and references to the Cardwell and Blackall districts made 'appropriate a number of lantern slides which followed. These were from pictures taken by Mr. D. W. Gaukrodger, of Alice Downs (Blackall), and from others which Mr. Chisholm took recently when visiting Alice Downs and Dunk Island, the latter place being the home of Mr. E. J. Banfield. Mr. Chisholm was thanked on the motion of His Excellency and Dr. F. W. S. Cumbræ-Stewart (president, Historical Society), and the Governor was also accorded a vote of appreciation.



BIRD SEEKING IN QUEENSLAND.*

By A. H. CHISHOLM, R.A.O.U.

(Part I.)

The history of the study of the brilliant and remarkable birds of Queensland is scarcely less fascinating than the birds themselves. Much of the romance of early exploration in primitive wilds is associated with this study, and it is a pursuit that has led to at least three of its devotees meeting violent deaths at the hands of the untamed aborigines of the country.

As is the case with other parts of Australia, the earlier history of bird-study in Queensland is full of notes of exclamation—expressions of wonder on the part of white men who met for the first time the remarkable mound-builders, the wonderful Bower-birds, the brilliant Parrots and Honey-eaters, and such other species as the curious-voiced Kookaburra, Bell-bird, and Whip-bird. The pity is that familiarity with these unique creatures has bred indifference on the part of many Australians of this prosaic age. Is the time coming when we will have to go abroad to find proper appreciation of our birds? Mr. A. H. Wilson, a visiting British ornithologist, stated

* "The Ornithological History of Queensland"; Presidential Address, 6th March, 1922.

recently in the *Emu* that any English boy is prepared to talk of Black Swans, Emus, Galahs, Lyre-birds, and "the bird that laughs at you." The only other Australian things that are equally household property in England, according to Mr. Wilson, are the boomerang, Victor Trumper (still an idol), the Kangaroo, and the Platypus! We need more of this appreciation closer home—more of the fresh, wondering interest taken in our entertaining fauna by the men of old.

When the idea occurred of presenting a paper on the rise and progress of ornithology in Queensland, it seemed that the task would not be an onerous one. A little research, however, caused a change of view. It early became apparent that the history of ornithology in this country is so interwoven with the history of the country itself—that is, its record in exploratory enterprise—that, if justice was to be done the subject, one must look more or less closely into the history of pioneering in Queensland, both before and after its separation from the mother colony of New South Wales.

It should be pointed out here that man-made boundaries are no concern of care-free wild birds. They frequent the class of country best suited to their needs and that needs them most. That, in a sentence, explains why it is not right to claim, as we frequently do, many kinds of beautiful birds to be "true-blue" Queenslanders. Indeed, there are few species of Australian birds confined to the political limits of any one State. Queensland is better off than other States in this respect; but even so, many of the bird-species that we have come to regard as "ours" are shared in the South by the sub-tropical jungle areas of New South Wales, and in the North by New Guinea and the Northern Territory. It is necessary to make this general point in order to clear what appears to be an anomaly—*i.e.*, that the great majority of birds which have their headquarters in Queensland were named from specimens taken outside our boundaries.

It is not within the scope of this paper to discuss the value of the claims that Chinese and French, respectively, touched Northern Australia several centuries ago. We know, of course, that representatives of Portugal, Spain, and Holland did actually reach our Northern shores well before Captain Cook—Spanish and Dutch place-names, relics of 16th and 17th Century exploration, are particularly plenti-

ful about Torres Strait*—but the purposes of this discussion will be served by beginning with the exploratory records of Britishers. In this respect, we find without effort a link with no less a naturalist than Gilbert White, of Selborne. Thomas Pennant, LL.D.—after whom our Pennant's (Crimson) Parrot† was named—was a constant correspondent of the famous old Englishman; and he is the Pennant who figures so freely in Banks's *Journal*. Banks, one of the most notable scientists of the reign of George III., and his great leader, Captain James Cook, were the first Britishers who had aught to do with the birds in the area that is now Queensland. Neither was an ornithologist, but when the *Endeavour* sailed along these shores in the good year 1770 they took, very naturally, a practical interest in all they saw. It is to Cook that we are indebted for various bird-names on features of our coast—to wit, Bustard Bay, Eagle Island, and Pelican Island. The Bustards taken in the Central district were voted by the voyagers "the best birds we had eaten since we left England," and "in honour of the feast we called this inlet Bustard Bay."

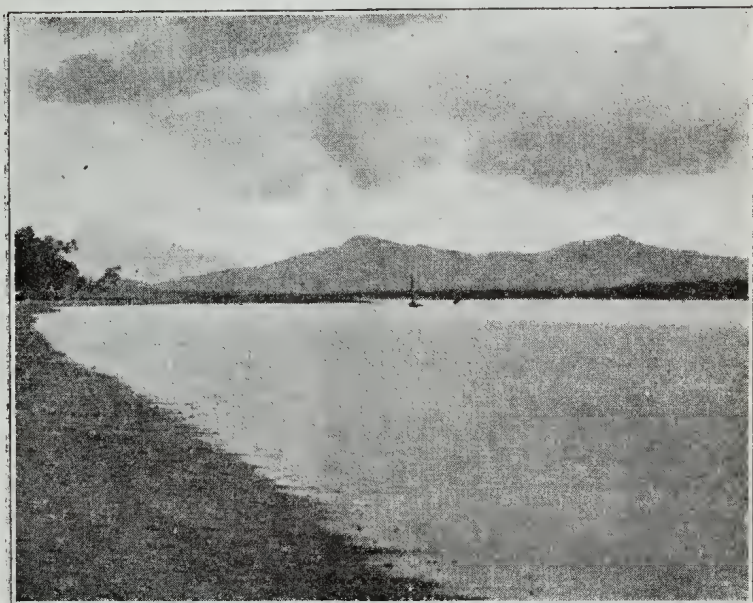
The reference to Eagle Island (which lies near Cooktown) is rather curious. Cook says: "We found here the nest of some other bird, we knew not what, of a most enormous size. It was built upon the ground, and was no less than 26 feet in circumference and 2 feet 8 inches high." Banks's description is similar, and he adds, "The only bird I have seen in this country capable of building such a nest seems to be the Pelican." (That "seems to be" was a wise precaution on the part of the botanist.)

Fired by these notes, and probably marking also the fact that the voyagers differentiated between this nest and one of an Eagle, seen on the same isle, an impetuous American professor rashly conjectured the huge nest to be that of *Dinornis*, the gigantic New Zealand bird, known only by its fossil remains. How long these conjectures raged is not clear, but forty years later Macgillivray, of H.M.S. *Rattlesnake*, laid them to rest by pointing out that no struthious bird would make a nest of the kind, nor would a flightless land bird of great size inhabit an

* The early history of Cape York and the Strait is very fully discussed in "Northmost Australia," a splendid historical work by the late Dr. R. Logan Jack, published posthumously this year; it was not available when the present paper was written.

† *Platycercus pennanti*.

island a quarter of a mile in length.* "Both Mr. Gould and myself," he added, "have seen nests of the same construction, the work of the large Fish Eagle of Australia." Macgillivray might have cleared the air still further by pointing out that the large nest was the accumulation of many years of nesting; Banfield has recorded an instance, in the same waters, of Ospreys occupying one site for at least twenty-five years.



Looking (at sundown) from Dunk Island towards Tam o' Shanter Point and Rockingham Bay, the most famous spot, ornithologically, in Queensland.

[Photo by A. H. Chisholm.]

Rather more arresting than the foregoing matter is Banks's reference to the shyness of the birds of the strange wild country into which the intrepid Englishmen were dipping. "A Crow in England," he wrote, "though in general sufficiently wary, is, I must say, a fool to a New Holland Crow, and the same may be said of almost all, if not all, of the birds in the country. . . . What can be the reason of this extraordinary shyness in the birds is difficult to say, unless perhaps the Indians are very clever in

* Macgillivray had visited Eagle Island.

deceiving them, which we have very little reason to suppose, as we never saw any instrument with them with which a bird could be killed or taken, except their lances, and these must be very improper tools for the purpose." The genial botanist, it will be seen, was a little shallow in his reasoning on both birds and "Indians" (the Australian blacks). Nevertheless, his was a prominent figure in Australian history, and it is good to have his name commemorated with one of our Black Cockatoos, *Calyptrorhynchus banksii*.

So far as I have been able to ascertain, there is a hiatus of over forty years* between those initial notes by Cook and Banks, and the time when definite ornithological work was carried out within the present borders of Queensland. And so we come to the time of Gould and Gilbert. John Gould, the bird-man whose name will ever stand at the head of Australian ornithology, first came to this country, accompanied by John Gilbert, in the year 1838. There is little need to say much of the great Gould, whose books speak of his work; moreover, it would seem that we can only lay claim to him zoologically, for his activities centred in Tasmania, South Australia, Victoria, and New South Wales, and he does not appear to have reached any further north than the Richmond and Clarence rivers.

With Gould's able coadjutor, Gilbert, however, the history of Queensland ornithology is closely associated. As Gould was concerned with ornithology rather than history, he gives no definite dates as to Gilbert's movements. It seems that this worker went first to West Australia, revisited England, and on returning to Australia was sent by Gould to Port Essington, situated on the Coburg Peninsula, a few miles north-east of the present Port Darwin. That was in the early forties of last century. The visit was made possible by the fact that the Governor of the day in New South Wales had established a military settlement at that outpost in 1831, one that was destined to continue until 1849. It was the creation of that short-lived settlement—a picturesque event in Australian history—that enabled John Gould to describe many of our North Queensland birds in his great work, *The Birds of*

* It is curious that little work among birds was carried out under the famous commands of Capt. Wm. Bligh (1788-1792), Captain Matthew Flinders (1791-1802), and Capt. Philip Parker King (1819-1821), all of whom—or their companies—must have had excellent opportunities in an ornithologically virgin land. Capt. King, however, was responsible for the discovery of one new Northern bird, the beautiful Yellow Oriole.

Australia; a goodly proportion of such birds extend across the top of the continent, and at the Coburg Peninsula they were taken by Gilbert. Incidentally, it is a striking fact that Gilbert's notes remain practically the only information we have regarding some of these birds at the present day—over eighty years later!

But Queensland was to know John Gilbert more intimately than that. Returning from Port Essington, he took up where Gould left off in the sub-tropics, and we find him later on the wonderful Darling Downs, discovered by botanist Allan Cunningham some seventeen years previously. It was on those downs that Gilbert discovered an essentially Queensland bird, the Scarlet-shouldered Parrot,* described by Gould as one of the most beautiful Parrots he had ever seen, but which, alas, seems to have almost entirely disappeared from this thankless realm! Then, in 1844, Gilbert was at Moreton Bay, within a few miles of this room, when Dr. Ludwig Leichhardt came along to undertake his famous overland expedition from Moreton Bay to Port Essington. Leichhardt knew of Gould, and being anxious (he says) to render all service in his power to natural history, he gave way to Gilbert's solicitations for a place in the party.

Evidently Leichhardt had no cause to regret this decision from a general viewpoint, for his *Journal*† contains numerous references to the services of the useful ornithologist, not the least of which was his skill in shooting birds for the pot. Practical evidence of the explorer's appreciation is shown in the bestowal of the ornithologist's name on a range and a river. *En passant*, Leichhardt remarks that "Mr. Gilbert has travelled much, and consequently has a rich store of *impressions de voyage*; his conversation is generally very pleasing and instructive in describing the characters of countries he has seen and the manners and customs of the people he has known. He is well informed in Australian ornithology."

Gilbert secured many new birds on the trip, of course, and everything appears to have been going well with him until 28th June, 1845. On that day, when the party was in the Gulf country, and within measurable distance of the spot‡ that Gilbert had made ornithologically famous, the

* *Psephotus pulcherrimus*.

† *Journal of an Overland Expedition from Moreton Bay to Port Essington, by Dr. Ludwig Leichhardt; London. 1847.*

‡ Port Essington.

ornithologist was killed by blacks. The natives attacked at 7 o'clock that evening, and as Gilbert emerged from his tent he was struck in the chest by a spear, and died almost instantly. He was buried on the spot next day, Dr. Leichhardt reading over him the burial service of the Church of England. Thus ended the man who, though working in a subsidiary capacity, stands out very prominently in the inner history of Queensland ornithology. His journal and bird specimens were returned to Gould, who wrote much therefrom, and who lamented that by the untimely death of Gilbert he had "lost an able coadjutor and science a devoted follower."

There is no Queensland bird bearing Gilbert's name, but it was given by Gould to a sweet-voiced southern whistler, *Pacycephala gilberti*, "as a just compliment to one who most assiduously assisted me in the laborious investigations required for the production of *The Birds of Australia*."

All other references to Gilbert are in accord. For instance, Jukes, the naturalist of H.M.S. *Fly*, when speaking* of Megapodes' mounds seen on Possession Island, corroborates "the singular account given by Mr. Gilbert in Gould's *Birds of Australia*," and adds, "I cannot mention the name of this gentleman without saying how much I, in common with all who knew him, regretted his unfortunate death."

With the passing of Gilbert, Leichhardt has little further claim on ornithological attention. His *Journal*, of course, has many references to birds, but few of the notes are arresting. Perhaps the most interesting are those showing the foreigner's never-ending interest in the remarkable Spotted Bower-bird;† on one occasion he made a very unusual record by finding four bowers close together, "as if," he says, "one habitation was not sufficient for the wanton bird to sport in."

Leichhardt has to be remembered with gratitude, too, for having brought Gilbert's journal and specimens back to Gould. There is a general impression among historical writers that the specimens were abandoned, but this is confuted by what Gould has to say, and Leichhardt mentions only the sacrifice of Gilbert's *botanical* specimens, which were poorly packed.‡ It should be added that the

* "Narrative of the Voyage of H.M.S. 'Fly,' " by J. B. Jukes, naturalist to the expedition; London, 1847.

† See article by Mr. Gaukrodger in this issue.—Eds.

‡ There was no ornithologist with the last Leichhardt expedition of 1847, the one of which nothing definite was learned after April 3, 1848, and whose fate remains unsolved to this day.

colonists of New South Wales erected a marble tablet to the memory of Gilbert in the old St. James' Church, Sydney. Members of the Royal Australasian Ornithologists' Union attended a memorial service there in October, 1911, and laid a wreath of wild flowers on the tablet.

F. Strange was the second of Gould's collectors to fall a victim to the Queensland blacks. He seems to have



The White-faced Robin (*Peccilodryas capito*), at home in a Lawyer-vine, South-eastern Queensland.

(This species was discovered in the early days by F. Strange, one of John Gould's collectors, who was killed by blacks. Photo taken with left hand, while right hand is near the mother-bird.)

[Photo by A. H. Chisholm.]

worked mostly, and very successfully, about the Northern Rivers of New South Wales (whence he sent Gould the first specimen he had seen of the Albert Lyre-bird), but came to Queensland later and worked north of Moreton Bay. He was killed by aborigines on one of the Percy Islands in, or about, 1854. (The date is erroneously given in one work

as 1846). Strange was a man of broad interests, and he is tributed by Diggles as "a zealous and efficient collector, and one who did much to render Australian natural history known to the world."

The late thirties and early forties constituted a very distinctive period in exploratory work inland and survey work along the northern coasts, and with some of those expeditions were bird-seekers of marked ability. In this respect I think chiefly of the voyage of the *Beagle*, the voyage of the *Fly*, and the voyage of the *Rattlesnake*. All three were survey ships of Her Majesty's Government, and were engaged on various parts of the northern and eastern coasts at the period mentioned; and all three, fortunately for Gould in particular, carried men to whom the study and advancement of natural history appealed as both a fascinating hobby and a patriotic duty.

H.M.S. *Beagle* was the pioneer of the trio. This illustrious vessel worked the north-west coast of the continent in 1838 (Captain Wickham) and in 1840-41 (Captain Stokes) she did survey duty along the Barrier Reef and round through Torres Strait to Port Essington. Apart from their marine work, the men of the *Beagle* discovered many rivers and did generally useful exploratory work; and in addition to all this they advanced very materially the natural history of the country. Benjamin Bynoe, surgeon of the *Beagle*, is many times mentioned with appreciation by Gould, who pays tribute also to "the perseverance and assiduity of Mr. Charles Darwin, Captain Wickham, Captain Stokes, Lieutenant Emery, and Mr. Dring."

H.M.S. *Fly* (Captain F. P. Blackwood) sailed from England on 11th April, 1842, and was engaged in the survey of Rockingham Bay in May of the following year. Later, it worked further north, notably in the vicinity of Cape York. The narrative of this expedition, written by J. B. Jukes, M.A., F.G.S., makes fascinating reading still, leavened as it is with many pleasant bird-notes, including references to migration of Australian birds at Cape York. Jukes wondered, as many of us have wondered since, at the reason for birds migrating from North Queensland to New Guinea. "In these latitudes," he says, "mere temperature cannot be the cause of it, although the variations of the seasons for different fruits or insects may." Officers of the *Fly* were also in communication with Gould; it was Commander J. M. R. Ince who sent the great ornithologist his first Sun-bird.

We come now to the *Rattlesnake*. This famous vessel arrived in Moreton Bay in October, 1847, and thence onward did much useful work, under the command of Captain Owen Stanley, with John Macgillivray as naturalist. A younger naturalist on the *Rattlesnake* was Thomas Huxley,* destined to achieve world-wide fame as a biologist. Moreover, it would appear that James Wilcox, of Sydney, a naturalist who sent many valuable bird-specimens and notes to Gould, was also aboard the vessel. The name of Wilcox is not mentioned in the *Narrative* of the voyage, but Macgillivray said of him, in a letter to Gould: "He was employed by the late Captain Stanley to procure specimens of natural history for the Norwich and Ipswich Museums, and to his zeal and industry as a collector I was often much indebted." Macgillivray himself was the distinguished ornithologist so warmly commended by Gould for his work among distinctive birds of North Queensland. "The officers of Her Majesty's ship *Rattlesnake*," says Gould, "so well employed their time in collecting the natural products of the Cape York district, that they added very materially to our knowledge of the fauna of that part of the continent."

The justice of this statement becomes evidenced in Macgillivray's *Journals*† and Gould's *Birds of Australia*. Both works are replete with Macgillivray's observations upon birds, many of which he was the first to collect. Nor was Cape York the only place of note in respect of the work of the *Rattlesnake*. In May, 1848, the vessel was anchored ten days at Dunk Island, where, in addition to many useful observations, Macgillivray took a "new and handsome Flycatcher," which Gould called *Monarcha leucotis*.

Consideration of the cruise of the *Rattlesnake* brings us to a contemporary event of ornithological interest, viz., Kennedy's tragic expedition from Rockingham Bay to Cape York. Tam o' Shanter Point, opposite Dunk

*It should be mentioned in passing that Professor S. B. J. Skerthly, for long an officer of the Queensland Field Naturalists' Club and Gould League of Bird-lovers, and still an Honorary Ranger under the Birds Protection Act, had the honor of being closely associated with Darwin, Huxley, and Wallace. It was his pleasure, as a young man, to assist Dr. Duncan to name some of Darwin's corals from the "Beagle" voyage. "Huxley," said Prof. Skerthly, recently, "built up my biology, and, I think, never quite forgave me for eschewing natural history for my first love, geology."

†"Voyage of H.M.S. 'Rattlesnake'," by John Macgillivray, London, 1852.

Island, commemorates the arrival of a vessel of that name at Rockingham Bay, in company with the *Rattlesnake*, in May, 1848. The leader of the expedition was Edmund B. Kennedy, the naturalist T. Wall, and the botanist W. Carron. The story of this fateful journey, which is told by Carron as an addition to *The Voyage of the Rattlesnake*, needs little recapitulation. Kennedy and party left the *Tam o' Shanter* and *Rattlesnake* at Dunk Island, and, after experiencing severe privations, nearly all were killed by blacks. Wall died on December 28, 1848, two days before the scanty residuum of the party was snatched from death by a rescuing party guided by the faithful Jacky Jacky. The chief ornithological discovery of the trip was the Cassowary. Wall took one of these big birds, for the first time, but had to drop the skin. A rough description was given by his brother, W. S. Wall, then curator of the Australian Museum (Sydney), in the *Illustrated Sydney Herald* of 3rd June, 1854, under the name of *Casuarinus australis*, and this was accepted by Gould.

Kennedy's expedition was not the most notable one made in Queensland during the forties. That honour is undoubtedly with Sir Thomas Mitchell, who, in 1845, penetrated the Maranoa and the interior, as far as what he called the Victoria River, now known as the Barcoo, and the Alice River, presumably called after his wife. It was unfortunate that Mitchell did not have an ornithologist with him on that great trip; nevertheless, his *Journal (Tropical Australia)* contains many interesting bird-notes, and shows a generally healthy appreciation of the good cheer of the birds. "The charm of a beginning," Mitchell writes at one stage, "seemed to pervade all nature, and the songs of many birds seemed like the orchestral music before the commencement of any theatrical performance. Such a morning, in such a place, was quite incompatible with the brow of care." A healthier attitude, surely, than that of one or two other early writers who described the Australian bush as melancholy and our birds as songless! Mitchell could even forgive the screeching of the White Cockatoos, in admiration of the spotless birds as "amidst the unbrageous foliage, forming dense masses of shade," they "sporting like spirits of light."

Perhaps it should be suggested at this point that the attitude of early observers (from scientists to convicts) in the wonderland of Australia seems to have been, as it is to-day, largely a reflex of the mind of the individual. The "bird that laughs at you" is, and probably always has been, one

of the favourites of the Australian town and bush; yet one finds an early Queensland writer using this harsh quotation at Jack's expense—

“At once there rose so wild a yell
As all the fiends from heaven that fell
Had pealed the banner cry of hell.”

“Appalling as the ravings of a madman” is his further description of the famous laughter. “One never learns to laugh with it or at it. It strikes upon the ear with a wild clash, increasing every moment in exasperating intensity, and ends in a prolonged sardonic chuckle, as though in cynical comment on the ways of man.” What a pity this outburst could not be translated to the Kookaburras! They would then have much to laugh about. However, the same writer is persuaded to observe later that it was “worth a journey from the other side of the world to see Black Swans preening their feathers, White Egrets sitting like marble figures in the trees, and Blue Herons standing at the edges of the reeds, all in a flood of sunshine at midwinter noon.”

But I digress. Further consideration of laud expeditions brings us to the distinctive work accomplished through the agency of A. C. and F. T. Gregory. These gentlemen, after doing much hard work in West Australia, accepted a commission from the British Government to examine the country between the Victoria River (North-western Australia) and Moreton Bay. They started from the town of Brisbane on 12th August, 1855, the party comprising eighteen persons, among whom were the brothers Gregory (commander and assistant), F. von Mueller (later a famous botanist), and J. R. Elsey (surgeon and naturalist).

It is with Elsey that we are chiefly concerned. A. C. Gregory himself, although his *Journal** is little more than a record of dates and distances, was a keen naturalist, but it was Elsey who collected many new birds for Gould to describe, and supplied much valuable information. His “finds” included many of our beautiful Finches; indeed, he supplied practically all of these birds that did not come the way of Gilbert and the men of the *Beagle*. Elsey did not accompany Gregory on his second expedition in search of Leichhardt (1858); he returned to England, and later went to the West Indies, where he died about 1860. His work is finely tributed by Gould under the

* “Journals of Australian Explorations by A. C. Gregory and F. T. Gregory:” Government Printer, Brisbane, 1884.

heading of *Malurus coronatus* (one of Elsey's discoveries), and his name lives with the Elsey Creek and Elsey Station, the latter the Northern Territory property made famous by Mrs. Gunn in the delightful book, *We of the Never-Never*.

Curiously enough, extensive collecting of new birds in what is now the State of Queensland ended with Separation from New South Wales; new birds have been taken since Elsey's day, of course, but good species were no longer to be found in the same numbers; certainly, more than 80 per cent. of Queensland's birds had been "christened" by the year 1860.

Passing by the expedition of Burke and Wills (1860-61) and one or two others of geographical but not ornithological importance, we come to the plucky travels of the brothers Jardine. In 1863 the Imperial Government had accepted a recommendation by Sir George Bowen, first Governor of Queensland, for the establishment of a settlement at Cape York, and Mr. William Jardine, police magistrate at Rockhampton, was placed in charge. Jardine senior went north by water, and his two sons, Frank and Alexander, went overland with stock, starting from the famous Gracemere Station in May, 1864. The *Narrative* of that meritorious and successful expedition* has many valuable notes upon birds, and there are further important observations, particularly upon migration, in the Appendix, contained in letters from Jardine senior to Sir George Bowen and the Colonial Secretary of the day. One observation that should be verified is Jardine's statement that the young of the Jungle Fowl (*Megapode*) "return and roost in the mounds at night."

In years immediately succeeding Jardine took many new birds, which were sent to Gould through Charles Coxen.

From this period onwards all references to Cape York carry with them the name of Jardine, which illustrious family offered hospitality to many notable explorers and naturalists. Captain (afterwards Admiral) John Moresby was there with H.M.S. *Basilisk* on several occasions in the early seventies; it was upon these cruises that Port Moresby (New Guinea) and Mourilyan Harbour (named after Lieut. Mourilyan, of Moresby's staff) were discovered. Lamentably enough, however, the *Basilisk* carried no

* "Narrative of an Overland Expedition from Rockhampton to Cape York," compiled from Journals of the Jardine Brothers, and edited by Frederick J. Byerley; Brisbane, 1878.

naturalist, a fact deplored by the captain when at the D'Entrecasteaux Islands. "A naturalist," he writes,* "would have envied our position, surrounded as we were by strange trees and shrubs and beautiful birds, but which, unfortunately, we could give no name."

Another exploratory visitor to Cape York in the seventies was Dr. R. L. Jack. Becoming Government Geologist of Queensland in 1877, Jack did much valuable work, both geologically and geographically. Resourceful as he was, however, he had very little knowledge of birds, and the only references to our subject that I can find in his writings are an allusion to a "rough arcade" of a Bower-bird, and a note upon some tiny bird that caught his attention near the Coleman River, Cape York Peninsula, in September of 1879. "Several miles from camp," he says, "we passed some enormous and fantastic blocks of grey granite, and saw a flock of very little birds, with bodies apparently no larger than butterflies. I could not, however, shoot any. My impression is that no bird so small is known in Australia." Bird-lovers may entertain themselves in conjecturing the identity of these birds. We have several species with claims to be considered the smallest Australian bird.

There is no other exploratory expedition that calls for special notice,† though that of Ernest Favenc, organised by Gresley Lukin, of the *Queenslander*, is worthy of passing notice. That West Queensland expedition started from Blackall, then the furthestmost west railway point, in 1878. The party's interest in birds was so practical that the leader kept a record of the number they ate. In a short period these figures totalled 584, including 50 parrots (Corellas and Galahs), 350 Ducks (five species), 150 Pigeons (principally Flock), 11 Geese, 4 Turkeys, 8 Spoonbills, 7 Water-Hens, 2 Shags, one Emu, and one Native Companion. To that menu was added later "such choice delicacies as Eaglehawks and frogs." Crows and Hawks were "carefully reserved to the last, when all else should fail."

(To be continued.)

*"Discoveries and Surveys in New Guinea and the D'Entrecasteaux Islands; a Cruise in Polynesia, and Visits to the Pearl-shelling Stations in Torres Strait, of H.M.S. 'Basilisk,' by Captain John Moresby, R.N.; London, 1876."

†For a concise survey of the history of Australia generally consult "A Short History of Australia," by Ernest Scott; Melbourne, 1916. Professor Scott has frequently brought "Forgotten Feathers" to the notice of ornithologists.

"A PRETTY LITTLE PROBLEM."

It is pleasing to know that Professor Sydney B. J. Skertehly (a founder of the Queensland Field Naturalists' Club) has taken over the science column in the Brisbane *Courier*, for some time ably conducted by the late Dr. J. Shirley. In his notes of the issue of the 22nd April he has some remarks to offer on the beautiful native flower known most commonly as the Fringed Violet (*Thysanotus tuberosus*). Professor Skertehly writes:—

"Patience is essential to a true observer. Here is a pretty little problem you may help me to solve. For the last two years I have been trying to find out the weather (or other) conditions which induce our lovely Fringed Violet (*Thysanotus*) to open in the morning or remain closed. The royal purple, tasselled beauties abound in our home paddock, and when they are flowering I have missed few days in which I have not done them homage. Sometimes I was sure they kept shut in abnormally hot, dry weather, only to find them glorying in the sunshine after having rigorously refused for days to open. Then again, I have been almost as sure it was dull weather they dislike; only to be foiled again. I am no nearer the solution than last year. With us they open between eight and nine in the morning, and close soon after noon, never to reopen. The act of closing takes from ten minutes to half an hour, and the action is very pretty to watch. First, the fringe at the tip of the petals folds over, then the side-ribs are laid atop, and finally the whole of the fringed appendage (for the true petal is quite a narrow thing) is wrapped up. Our specimens have never studied botany, for they never twist their sepals after flowering as the fruit ripens, as the text-books tell us is their bounden duty.*

"If you have a microscope, even a low-powered one, examine a petal, and you will be enchanted with the orderly arrangement of the colour-bodies. If you wish to paint the flower you will find yourself bothered at first with the red light that streams through it when seen by partly transmitted light. I find it best, first, to lay in a ground of pure carmine, and before it is quite dry to run over a light wash of prussian blue—cobalt and ultramarine are fatal. I don't find *Thysanotus* very attractive to insects, though I have seen them buzzing all round as I lay observing; but, with us at any rate they seem to get on pretty well without them, for hardly a flower misses seeding, though it is open but for four hours at most. Now for a bit of that caution I have been inculcating. What I have recorded of the ways of Fringed Violets is what I know by close, continued accurate observation to be true for Molendinar by the Nerang River side. Whether it holds good everywhere I cannot say, but you may help me to determine. Some of the results of my own observations on flowers seem to be so opposite from those of other writers that one pauses before expressing an opinion."

* G. Bentham in "Flora Australiensis"; F. M. Bailey in the "Queensland Flora," &c.—Eps.

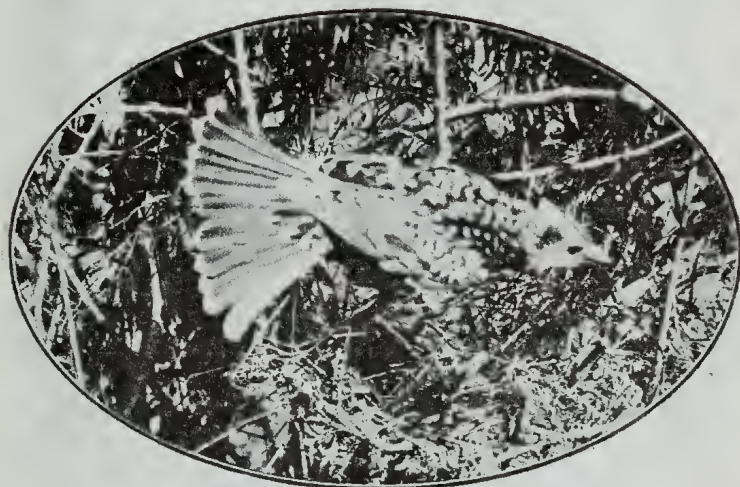
SPOTTED BOWER-BIRDS AT HOME.

By D. W. GAUKRODGER, Alice Downs, Blackall.

PART 1—NESTING NOTES.

Much has been written relating to that most interesting creature, the Spotted Bower-Bird (*Chlamydera maculata*), but so far I do not know of any special observations being recorded of the bird's movements at and about its nest.

It is rather an astonishing fact that, notwithstanding the numbers of these birds that are to be seen (I write



Mother Bower-bird on the Offensive.

("With feathers ruffled, she would show plenty of fight.")

[Photos by D. W. Gaukrodger.

particularly of the Barcoo district, Central-west Queensland), it is so seldom one can drop on to their nests; and it is a safe assertion that the big majority of bushmen—keen observers, too—have never seen one. The bowers, or playgrounds as they are generally called, are exceedingly common, and every bushman can relate some peculiarities manifested by the birds in and about these wonderful little structures; but few have any knowledge of the nests, and one begins to reason why this should be so.

The fact that during September, October, and November in each year numbers of young, fully fledged Bower-birds can be seen being fed by their parents disposes of

the possibility of the species not nesting here, and the puzzle is increased when that too common individual, found in every district, who is always on the look-out for young birds to cage, seems never to have his stock augmented with young Bower-birds.

During nearly twenty-five years' residence in these districts, and in spite of being at all times on the *qui vive*. I have only seen three Bower-birds' nests, and even now have not seen the eggs *in situ*, as each of the three homes I refer to contained two little ones. In thinking over the positions and localities of these three nests, I get no guide to assist me in locating other homes. Each was built in a widely divergent place.

The first I saw was in an orange-tree not more than ten yards from the front veranda of the Saltern Creek (Barcaldine district) homestead. That was about sixteen years ago. The next was a quarter of a mile or so from a settler's house in this district (Blackall). and lodged in the top of a bauhinia sapling in a most exposed position, about fifteen feet from the ground. The last one I found during September, 1921, miles away from any habitation, and tucked away in the shelter and protection of a thick native creeper, entwined into a "dead finish" bush. It was this nest that enabled me to frame these notes, and that formed the subject from which I was able to obtain some photographs.

On the particular day on which I came across this nest I was searching around with my camera on the look-out for subjects. Usually, when on such expeditions I do not give much attention to these thickets, for I find from experience that our birds out here do not as a rule take advantage of this shelter—more than likely, I think, on account of the harbour it provides for their natural enemies such as snakes, little ignanas, and lizards of many kinds. However, departing from my usual custom on this occasion, I investigated the clump. It was a lucky move.

From the first glimpse I got of the nest, only about eight feet from the ground, I thought it strange that a Butcher-bird should build in such a secluded spot. With the aid of a leaning stick, I started to climb to make further examination, as no eye could fail to notice that the nest was of this season's construction. With my hands I parted the matted vines, and had only made one step upwards when I got satisfying evidence that I was at a Bower-bird's nest. Just above me was the bird, with feathers spread from head to tail, and uttering incessantly the well-known hissing and scolding notes peculiar to her

kind. I ignored this antagonism, bent as I was on seeing what was in that home, and I drew myself upwards until I could see two little fluffy occupants.

When a bushman wishes to demonstrate his satisfaction with an event he usually says, "That'll do me!" and so I repeated these words to myself as I carefully stepped to the ground. As I walked around the tree studying the thickness of the bush and the best direction to point the camera lens, suitable to the light, the old bird sat above, motionless and silent, but watching me suspiciously.

After deciding on the time of some future day favourable to photography, and tying back a few limbs that would probably be an obstruction to the camera eye, I left the spot for the time being.



Mother Bower-bird; more tractable.

("In a dark place, surrounded by protective colouring.")

It is outside the object of these notes to relate all the many little dodges resorted to in photographing this bird at its nest. Suffice it to say that for three weeks I gave up all my spare time to "battling" with a shifty, cunning, and suspicious subject, surrounded by protective colouring, in a dark spot with streaks of strong light from a summer sun striking through. And so the failures and disappointments were many.

Is it possible that the ease with which one could mistake a Bower-bird's nest for some other only partly built (and therefore not looked more closely into) is the principal reason that so few nests are seen? The construc-

tion of small sticks, loosely put together, resembles very much a Butcher-bird's nest in the making, with the cup itself only very little deeper than that of the Bronzewing Pigeon. And so far as ventilation for the occupants is concerned, nothing better could be designed.

Young Bower-birds seem to be cunning almost from the day they are hatched. Try to lift one from the nest and it hangs on to its home tenaciously, but when freed it will lie in the hand in whatever position it may be placed, shamming death. But that little open corner of one eye exposes the trickiness. As these young birds grew they became wild and suspicious, and in the partly feathered stage would crouch and make the best of the poor protection provided by their shallow nest as I moved around; but my back being turned they would stealthily move out to a thicker portion of the tangled boughs and only return when all was quiet.

From pepperinas and Moreton Bay fig-trees near homesteads, and also from the common gidgee tree tops above camps, I have heard Bower-birds mimicking almost every note and call familiar to the bush. But for energy and persistence in this direction I have heard nothing to equal that mother Bower-bird during my first few visits to her home. I could without the slightest difficulty recognize every call she made, with the exception of one which was a distinct sound like "Woggy," repeated sometimes twice and at others four times in succession. Being deep, this note gave one the feeling that she was endeavouring to imitate some blackfellow's "lingo," or else was "taking off" an isolated boundary-rider calling to his only dog.

Besides the variety of this particular bird's mimicry, there were the quick changes she made from one subject to another. One could easily imagine at one moment that some interfering Willy Wagtail was in that tree, whilst in the next breath the guttural "Thump, thump" of the Emu was easily recognizable. Without, as it were, changing breath, the Storm-bird would then get a turn, and in quick succession Magpies, Crows, Butcher-birds, Soldier-birds (Miners), Babblers, and hosts of others would come in for attention.

Occasionally, as if these displays were not interesting me to her satisfaction, she would suddenly almost fall to the ground, and with neck stretched out, feathers ruffled, and wings spread, she would creep through the grass, pretending helplessness. I have seen many other birds making a somewhat similar "stunt" when their young

seemed in danger, but none that could carry it out with such thoroughness as this Bower-bird.

Intermittently, the mimicry and antics of pretence would continue as long as I stood perfectly still, but for me to make one move, especially to place my hand at the nest, would cause her to dart with a hiss and a scold, and, with feathers ruffled, show plenty of fight. Although the bird did not actually strike my hand, once or twice she came too close to be pleasant.

The mother-bird feeding the young was not without interest. As well as I could judge from my hiding bower, about twenty yards distant, variety seemed to be the main feature of the menu. Grasshoppers, moths, caterpillars,



Baby Spotted Bower-birds; about one week old.

(They will sham death in any position in which they are placed at that age.)

and many kinds of berries all seemed to be acceptable. Sometimes the morsel was more than the youngster could swallow easily, then the old bird would give assistance with such determination as almost to suggest that she was aware she had no time to waste on delicate appetites, formalities, or good manners.

Strangely enough, I did not see any other Bower-birds than the one about this nest until the young ones were almost ready to fly. For about a week prior to their being ready to leave, two other birds came along. They did not seem, however, to be interested in any of the proceedings. They did no mimicking and made no attempt

to bring food to the nestlings; in fact, to all appearances they were merely casual visitors.

Those two little Bower-birds are still with us. They are in a specially built enclosure, and are detained only for the purpose of proving whether the species takes up mimicry without the parent's tuition or not, and also whether it is one of their accomplishments for one to drop bones from the air for its companion to catch. With these matters in particular solved, we hope to allow them absolute freedom. They are now seven months old, are fully fledged, but still lacking those pretty little pink crest feathers peculiar to the matured birds. They show deep



Young Bower-birds; just after leaving nest.
(These birds are now being studied in captivity.)

[Photos by D. W. Gaukrodger.]

interest in every sound and movement that occurs about them, but so far have made no attempt at mimicry.

They relish every kind of food that is given them, and enjoy regularly a midday bath; consequently, they are both sleek and healthy. Just recently they have started to amuse themselves by hopping and playing about their enclosure with sheep vertebrae bones, shining tins, and coloured glass; and just as I finish these notes one is busy entertaining its mate (and, incidentally, annoying me) by persistently tingling a little sheep-bell that their attendant has attached to one of their perches, with the object of encouraging them in their frivolity.

THE LATE DR. SHIRLEY.

Queensland natural history suffered a distinct loss by the death on the 5th April of Dr. John Shirley. He was always an ardent supporter of the Field Naturalists' Club and Gould League of Bird Lovers, of each of which he was a past President. His was a familiar figure at the Club's meetings and outings, particularly the more extended excursions, as he was chiefly a naturalist of the open air, and not merely a text-book and laboratory student.

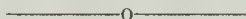
Australia would be the richer if more of our public men were sufficiently wide-visioned to take such a healthy interest in the great out-of-doors. That interest was part of Dr. Shirley's being, and only those who "went bush" in his company knew the zest with which this naturalist of past seventy would scale a height or clamber into a gully—particularly those of delectable Tambourine Mountain or the Macpherson Range National Park—in pursuit of plants or land-shells.

Dr. Shirley was born at Dorchester (England) in 1849. He arrived in Queensland in 1878, and was appointed head teacher of the State school at Roma. In 1879 he was appointed District Inspector of Schools, and, while holding this office for various parts of the State, travelled, practically speaking, over every portion of it. Much of this travelling was accomplished at a time when there were no railways and very little settlement, schools being a great distance apart. It afforded a good opportunity for pursuing natural history studies and the collecting of specimens.

In 1909 Dr. Shirley was appointed Senior Inspector of Schools, and in 1914, when the Teachers' Training College was established, was selected for the position of Principal—a post he held till the end of 1919, when he was retired under the provisions of the Public Service Act. It may here be mentioned that it was characteristic of the man that when over sixty years of age he spent the long vacation due to him for continuous service in studying and preparing a thesis for the degree of Doctor of Science at the Sydney University. After leaving the Training College he was appointed Conchologist to the Queensland Museum, a post he had in previous years filled in an honorary capacity. This position he held for one year and nine months, when the pruning-knife of retrenchment did away with the position. He was a versatile writer whose studies covered a number of branches of natural science, botany and conchology being his strongest and most loved subjects. His most important published work is *The Lichen Flora of*

Queensland, mostly first published as a series of papers in the "Proceedings of the Royal Society of Queensland." He also contributed several important papers to the *Queensland Naturalist*.

Dr. Shirley's death leaves a blank in the ranks of the older naturalists associated with this club. We of the younger school are chiefly specialists in our respective studies, and we can ill afford to lose men like the late Dr. Shirley, whose wide experience and breadth of knowledge were always at the disposal of others.—The Editors.



SYLLABUS, MAY-JULY, 1922.

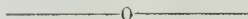
May 15: Evening Meeting. Practical Demonstration by Mr. R. Illidge on Mounting and Setting Insects. Exhibits. Reports of Excursions.

June 3: King's Birthday—Excursion to Burpengary, North Coast Line. Burpengary, a few miles north of Petrie, is a place so far unvisited by the Club. It seems to offer a good field for general work. Train leaves Central 8.5 a.m. Returns to Central about 6.30 p.m.

June 19: Evening meeting—Lecture on "Marsupials," by Mr. H. A. Longman, F.L.S. (Director Queensland Museum). Exhibits.

July 9: Saturday afternoon excursion to One-tree Hill (Taylor's Range). Subject: "The Study of Eucalypts in the Field." Leader, Mr. C. T. White, F.L.S. (Government Botanist). Meet at Cemetery Gates 2.30 p.m.

July 17: Evening meeting.



Out upon the hill-top, far above the river-mist,
Listen to the Butcher-birds fluting in the dawn;
Hear the little Robins pipe
Ere the trees the sun has kissed;
All the gladsome bird-songs fill the early morn.

"Lalage."

The Queensland Naturalist.

JOURNAL OF THE QUEENSLAND NATURALISTS' CLUB
AND NATURE-LOVERS' LEAGUE.

VOL. III.

AUGUST, 1922.

No. 5.

PROCEEDINGS.

April to June, 1922.

April 3.—A letter was received from the Minister for Agriculture notifying the proclamation of regulations under the recently-passed Animals and Birds Act. The matter was discussed by Messrs. A. H. Chisholm and H. A. Longman, the latter suggesting the establishment of reserves in Western Queensland for the preservation of kangaroos and wallabies. It was agreed to accord the Minister (Hon. W. N. Gillies) and the Under Secretary (Mr. E. G. Scriven) a vote of appreciation. The feature of the evening was an address by the President (Mr. R. L. Higgins) on limestone caves to the North of Rockhampton. With the aid of lantern slides and specimens, Mr. Higgins emphasised the picturesque nature of these curious formations, and strongly urged that they be reserved for the people. Other interesting exhibits were shown by members.

May 15.—Mr. R. Illidge gave a most informative paper and demonstration on the treating and mounting of butterflies. Entomological exhibits were sent by Messrs. Hayes (Kyogle, N.S.W.), C. Geissmann (Tambourine Mountain), and J. C. Smith. Mr. Illidge supplied descriptive notes on each exhibit. Among other exhibits was one tabled by Mr. C. T. White (for Mr. E. W. Bick) —a specimen of *Barringtonia speciosa*, which was found at Jumpin'-pin, Stradbroke Island, and was thought to have drifted across the Pacific from Fiji.

June 19.—In response to an invitation from the Royal Geographical Society (Queensland), Mr. H. Tryon was appointed to represent the Club on a committee being formed to consider the question of studying the Great Barrier Reef from both economic and scientific standpoints. Mr. White introduced the subject of an arboretum

for Victoria Park, Brisbane, upon which matter he had spoken to other societies, and, after the proposal had been supported by various members, it was agreed to write the Mayor of the city in favour of the project.

OUR MARSUPIALS.

At the June meeting, Mr. H. A. Longman (Director of the Queensland Museum) lectured on the Marsupials of Australia. He stated that Pelsart, the captain of the Dutch East India Co.'s ship *Batavia*, gave a description of the *Dama* wallaby from the Abrolhos Isles, where his ship was wrecked, as long ago as 1629. This was the first mention of an Australian marsupial, although this particular species was not scientifically described until 1817. Arn Island wallabies were living in the garden of the Dutch Governor of Batavia in 1711.

The lecturer pointed out that extraordinary interest attached to the marsupials, owing to the birth of their young in an immature condition, the new-born young of a large kangaroo being only half an inch in length. Various modifications of the pouch were mentioned, including the big bag of the kangaroos and allies, the smaller bag, opening backwards, of the native bear and the bandicoots, the circular cavity with a muscular rim of the wombats, and the shallow depression of the carnivorous native cats. The so-called marsupial bones were found in both sexes.

About 150 species of marsupials were known from the Australasian region, including representatives from the Celebes, in the North-west, and also from the Solomon Islands, where a cuscus was found. Marsupials could be broadly divided into two divisions, herbivorous and non-herbivorous, the difference in diet being strikingly illustrated in the dentition. The presence of two smaller inner toes, closely united and used as a fur-comb, was a well-marked characteristic of the great majority of our species. Special mention was made of rare forms, including the marsupial moles from Central Australia, the tiny honey-eating *Tarsipes*, the fat-tailed pouched mice, the Queensland wombat, the tree kangaroos of North Queensland, the feather-tailed opossum, and the beautiful ring-tailed opossums from the Herbert River district. The so-called flying squirrel, which had a thin membrane between its

fore and hind limbs, was a wonderful parachutist, and he had measured a distance of over 80 yards, which he had seen traversed by these phalangers when gliding through the air from tree to tree.

The lecturer claimed that the fauna of Australia was of greater interest than that of any other country, and that the efforts made to ensure its adequate protection were well worthy of support. The majority of marsupials were by no means lacking in virility. Australian opossums had thriven wonderfully in New Zealand, and, if given fair play, should never become extinct. Referring to the unprotected kangaroos and wallaroos, Mr. Longman expressed the hope that should these characteristic Australian animals ever become rare, fenced reserves would be established in appropriate districts in Western Queensland. In conclusion, brief reference was made to the many extraordinary fossils found on the Darling Downs, including the giant *Diprotodon*, the Brigalow skull, known as *Euryzygoma*, and the carnivorous pouched lion.

Many interesting slides were shown, a number of them being reproduced from John Gould's beautiful plates.

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THE RELATIONSHIP BETWEEN SOIL, FOREST FLORA, AND GEOLOGICAL FORMATION.*

Dr. Jensen lectured at the December meeting of the Club on the dependence of forest flora and soils on the underlying geological formation. The chemical composition and texture of soils depend, he said, upon the rock from which they are derived, and to a less extent on climate, which considerably affects the processes of rock-weathering and soil-leaching. The forest flora was shown to be, especially in our western country like the Roma and Springsure districts, a faithful guide to an adequate idea of the properties of the underlying soil and even of the class of rock below. Thus, Brigalow (*Acacia harpophylla*) scrub is always a sign of highly calcareous, very heavy, usually black soil, with heavy clay subsoil below, and calcareous rocks (shales or limestones) underlying. Belar (*Casuarina lepidophloia*) indicates a loamy soil good in lime such as is

* It may be mentioned for those interested that a series of articles on the above question, by Dr. Jensen, appeared in the pages of the *Queensland Agricultural Journal*, October 1921 to January 1922.—Eds.

shed by calcareous sandstones. Pine (*Callitris robusta*) is invariably found on poor yet deep silicious sandstone country. On tablelands of silicious sandstone we get the Ironbark (*Eucalyptus decorticans*) on shallow very poor soils. On silicious sandstone ranges with steep slopes, Lancewood (*Acacia doratoxydon*) and another *Acacia* (*A. Bancroftii*) are very abundant. These trees prefer the quickly drained slopes.

The Poplar Box (*Eucalyptus populifolia*) is a lover of calcareous sandstone country with fairly heavy soils and clayey subsoil. It is usually poorly drained country this tree prefers, and where the run-off is very bad and the subsoil has very high water capacity, the Sandalwood, *Eremophila Mitchellii*, accompanies the Box. The common Silver-leaved Ironbark (*E. melanophloia*) flourishes on the same formations as the Poplar Box, but only on hills and well-drained places.

The Spotted Gum (*E. maculata*) likes sandy loams on well-drained slopes. The lemon-scented variety (*E. maculata* var. *citriodora*) seems to be confined to gravelly and conglomerate country.

Numerous other plants and their significance as an indication of the agricultural value of soils were mentioned. It was emphasised in brief that the old plan of the bushman of judging country by the trees growing on it is sound in practice.

Mr. C. T. White (Government Botanist), speaking in support of a vote of thanks to the lecturer, pointed out how important would be the study of the distribution of our grasses and forage plants in relation to soils and geological formation. He also strongly advocated the inclusion of a botanist in geological reconnaissance parties, so that the botanical survey of the State could be carried out systematically at the least expense.

POPULARISING TREES.

On a recent excursion of Club members, which Mr. C. T. White (Government Botanist) led to Mount Coot-tha, Professor H. C. Richards (Queensland University), who was one of the party, suggested that it would add to the interest of the reserve if nameplates were placed on the most prominent of the native trees growing beside the chief path. The Mount Coot-tha reserve being under the control of the Brisbane City Council, the suggestion was passed on to the Mayor (Alderman H. J. Diddams, C.M.G.). He received it favourably, and Mr. White has been asked to co-operate with the City Council in carrying out the pleasant little innovation.

BIRD SEEKING IN QUEENSLAND.*

By A. H. CHISHOLM, R.A.O.U.

PART 2.

We leave now the era of geographical exploration of Queensland and come to the work of residents and individual visitors. Firstly, consider the visitors.

Throughout the writings of John Gould there is frequent mention of the name of Samuel White, of Adelaide. This gentleman was a keen naturalist, and it is somewhat remarkable, as Mr. A. J. Campbell points out,† that he was not renowned for research. He was to have accompanied the Burke and Wills expedition, but came instead on a general collecting tour of Queensland in 1867. Making inland from Cleveland Bay (Townsville), White's party encountered great privations, and ultimately returned to the coast at Port Denison. Thence they worked down past Brisbane, and across the Macpherson Range into New South Wales.

Later, Mr. White fitted out a boat called the *Elsca* and went north, intending to visit Cape York, New Guinea, and the Arn Islands. After leaving the Arus, his crew mutinied and locked him in his cabin, whence he was rescued, it is said, by J. T. Cockerell and F. W. Andrews, two of his collectors. The boat was subsequently pillaged, the collections sold, and the diaries lost. However, much of the history of these trips has been collected from private sources by S. A. White (son) and published in the *South Australian Ornithologist*. White, senr., died on 17th November, 1880.

An interesting link with White, senr., and through him with Gould, is offered by Captain C. E. Pennefather, a retired mariner, of Brisbane, who is the possessor of the two volumes of Gould's *Handbook*, autographed by the author as a presentation to his friend White. The latter was met and assisted by Captain Pennefather when he (the captain) was pearl-shell fishing in Torres Strait in the seventies. He took the ornithologist on several cruises in his vessel, the *Crinoline*, and in return White presented

* "The Ornithological History of Queensland"; Presidential Address, 6th March, 1922.

† "Nests and Eggs of Australian Birds": Intro.

him with the *Handbook*, and also taught the manner to skin birds. At that time White was the guest of Frank Jardine, the intrepid explorer and pioneer of Cape York.

George Bennett, M.D., author of *Gatherings of a Naturalist in Australasia* (London, 1860), was an English-Australian scientist who did good general work, and was a friend and helper of Gould. Apparently, Dr. Bennett's only personal acquaintance with this State was when he made, in 1871, "A Trip to Queensland in Search of Fossils."* His book, however, contains numerous references to birds whose "headquarters" are in Queensland; for instance, the "Kowhat" (Koel Cuckoo), "Paradise Honeysucker" (Rifle-bird), and "King Honeysucker" (Regent-bird). It was a weakness in the old days to place many Australian birds among the Honeyeaters; neither of the birds so designated by Bennett belongs to that group, any more than does the "Coachwhip Honeysucker" (Whip-bird), of old Dr. Latham. Bennett also has some interesting notes upon our fine Jabiru, one of which birds he kept in captivity, and which he found needed a pound and a-half of fresh meat daily to keep it in good condition.

Dr. E. P. Ramsay was probably the first ornithologist to visit Rockingham Bay after Macgillivray. As ornithologist to the Sydney Museum, Ramsay was at Cardwell in 1874. He also wrote, in the *Ibis* (England) for 1875, a "List of Birds from Port Denison, Queensland," but in that case specimens were supplied by a Mr. Rainbird. Another Northerner who supplied Ramsay with many novel or rare bird-specimens in the early seventies was Inspector Robert Johnstone, of the Herbert River Police Force. Ramsay died at the end of 1916, leaving behind him a record of fine service to Australian ornithology.

The name of Carl Lunnholtz may be introduced here. It is doubtful, indeed, whether this gentleman should not be grouped with the Queenslanders, inasmuch as the greater part of his four years in Australia was spent in the outlying parts of this great State. Certainly it was his experience in Queensland that furnished the material for his book, *Among Cannibals* (an account of four years' travels in Australia, and of camp life with the aborigines of Queensland: London, 1890). Lunnholtz, an educated Norwegian, was first in Queensland slightly more than forty years ago. He spent ten months (1880-81) at the hospitable Gracemere Station, after which he set out (August, 1881) on an 800-miles tour of West Queensland. That experience was

* From a thorough memoir by Henry Tryon, written when Dr. Bennett died, at Sydney, in 1893, at the age of eighty-nine years.

followed by fourteen months' study of the northland, during most of which time he lived among the wild blacks in the valley of the Herbert. As a matter of course, there is much of ornithological, as well as ethnological, value in Lumholtz's book. The homestead at Graemere, according to an illustration in his work, looked precisely the same forty years ago as it does now; but it would seem that birds were more plentiful on the fine mere in those days than they are at present, though the big lake has long been a sanctuary.

"Not many years ago," says Lumholtz, "Mr. A. Archer counted thirty-seven species of birds on the lagoon. He believes that a few years ago there were 10,000 birds on the lake." The most striking bird Lumholtz saw there was the Parra, or Lotus-bird. He wondered how the young ones could disappear so quickly, until one day (he says) a couple that he surprised dived under water and held themselves fast to the bottom, while he "watched them for a quarter of an hour before taking them up."

The most valuable portion of Lumholtz's book, however, is that dealing with the far North. He has many important observations on birds restricted to such rich regions as the valley of the Herbert River, and shows a healthy appreciation of the relief provided by all "sounds and sweet airs," from the "jubilant, happy voice" of the "Towdala" (*Orthonyx spaldingi*) to the "thundering call of the Cassowary," which latter jungle-monarch he describes as "the stateliest bird in Australia."

Mention of a blacks' name for a bird ("Towdala") recalls a good story told by Lumholtz. He relates that a certain settler, who was out after Emus, accosted a native with the query, "You bin see 'im *tshukki-tshukki* big fellow?" The heathen in his blindness regarded his questioner in silence for a moment, and then replied with dignity, "I suppose you mean an Emu!" A touch of civilisation, however, apparently did not affect the appetite of the average aboriginal, for Lumholtz records later that one of his Northern "boys" ate fourteen *Tallegalla* eggs (each about three times the size of a hen's egg) in two hours, "and felt no inconvenience therefrom."

We come now to A. J. Campbell, of Victoria, a distinguished living ornithologist, and one whose fondness for the Roekingham Bay district has led him to pay several visits there. Mr. Campbell, who has been at the head of Australian cabinet and field ornithology for many years, was first at Cardwell in 1885 (in company with A. and F. Coles, of Melbourne, and A. Gulliver, of Townsville) and

his latest visit was as recent as five-years ago. *Nests and Eggs of Australian Birds* (Mr. Campbell's fine book) is replete with observations gathered in North Queensland. Mr. Campbell was born in Melbourne in 1853, and still resides there.

D. Le Souef, another Melbourne veteran, has also made several fruitful trips to North Queensland, and much research work has been accomplished in recent years by collectors sent out by Mr. H. L. White, of "Belltrees," Scone, New South Wales, notably S. W. Jackson and Wm. McLennan. The work of the latter has been confined to the wilds of the North, but Jackson's bird-seeking has led him into all parts of Queensland. Dr. W. D. Macgillivray, of Broken Hill (an ex-President of the R.A.O.U.) is another ornithologist known to Queensland. He spent many of his early years on a station property in the Gulf country, and has since visited various coastal areas. Dr. Macgillivray is a connection of two distinguished departed ornithologists, William Macgillivray, of Scottish birds fame, and John Macgillivray of the *Rattlesnake*.

The last Southern ornithologist to visit Queensland was Captain S. A. White, of Adelaide, who came to report on the food of birds in our State forests. At present there is an American collector in the field, H. C. Raven, who is working North Queensland in the interests of the American Museum of Natural History. His visit, and the recent one of C. M. Hoy, representing the Washington Museum, constitute the debut of American field ornithologists in Queensland.

Turning to residents of Queensland who have been prominent in ornithology, it has to be noted at once that, in this respect, no one stood higher in the early days of the colony than Coxen and Diggles. Charles Coxen was a brother-in-law of John Gould,* with whom he and, I think, his brother came to Australia in 1838. It would appear that, for a little time, Coxen was associated with Gould in collecting in New South Wales. He then engaged in pastoral pursuits on the Hunter River, and subsequently moved north to the Darling Downs, and took up the now well-known Jondaryan sheep station. "In this enterprise," says the

* Henniker Heaton's "Dictionary of Dates" (1879) confuses Coxen with Gilbert by announcing that the latter was a brother-in-law of Gould, whereas he was really a professional collector.

Brisbane Courier of 1876, "he was far from fortunate."* However, Coxen was obviously a highly-respected citizen, and in 1860 he was elected to the first Queensland Parliament as member for the old Northern Downs constituency. In 1863 he was re-elected, and in May of that year was chosen to be Chairman of Committees in the second Parliament. His Parliamentary life ended in 1867, when he was defeated by the late Henry Thorn.

Gould's fine influence and example had not been wasted upon Coxen. Naturally a keen man—one sees this in the good features prominent in an historic picture of members of the first Queensland Parliament—he studied natural history with zeal, and in the *Proceedings* of the old Queensland Philosophical Society are original papers which he presented on ornithology, geology, marsupials, and aboriginals. Imagine a Parliamentarian of the present day attempting this! Coxen was long vice-president of that society, when Sir George Bowen (first Governor) and Sir James Cockle (first Chief Justice) respectively, occupied the Presidential chair; and two other ornithologists in S. Diggles and H. C. Rawnsley were members of the Council. Coxen also attended to the bird specimens in the society's museum. What became of this collection I do not know; indeed, the *Proceedings* themselves are not complete in any big library in Brisbane. Coxen's paper dealing with the bower-building habit of the Regent-bird, which he was first to chronicle, was printed, like many other such papers, in the old *Brisbane Guardian* (24th May, 1864) and afterwards in the *Proceedings* of the Philosophical Society; it was reprinted extensively in Gould's *Birds of Australia*.

After leaving Parliament, Coxen spent a few months at Gympie, in the early days of that goldfield, and in March of 1868 he entered the Government service as a Crown Lands Commissioner. This service he continued, chiefly in the Moreton district, up to within a few weeks of his death, which occurred at "Omega Cottage," Bulimba (Brisbane), on 17th May, 1876. He was then aged sixty-seven, having been born at Ramsgate (England), on 20th April, 1809. His talented wife remained, but there were no children. Coxen lies,

* Mr. John Mackenzie, of Ipswich, an old friend of Coxen's, writes me: "Poor old Charlie!—he was a fine genial fellow. He left no family. He was in Parliament a few years, and advocated free selection before survey; that lost him his seat. There was no payment of members in those days. I have heard him speak of his brother-in-law, Gould." One or two other old residents speak with appreciation of both Mr. and Mrs. Coxen, and mention that they frequently "roughed it" together on natural-history hunts in Moreton Bay.

appropriately enough, in what is now a very quiet church-yard in the bush, near Murarrie, between Brisbane and the coast.*

It was in keeping with the public spirit of Coxen that he did much towards the establishment of the Queensland Museum. He was a notable naturalist, and we may rejoice to have his name commemorated in that of the pretty little Fig Parrot, *Cyclopsitta (Opopsitta) coreni*, once a common bird of the scrubs but now rarely reported.

Silvester Diggles was born in England in 1817 and died in Brisbane in 1880. The first Queensland resident to attempt a literary work on birds, he was a man of general scientific, artistic, and musical attainments. He was keenly interested in both ornithology and entomology; moreover, his knowledge of astronomy and art led to him being selected by the Queensland Government to represent the Colony on the Australian Eclipse Expedition from Sydney to Cape Sidmouth in 1871-72. As a result, Diggles reported interestingly on birds, insects, and scenery of North Queensland to the Queensland Philosophical Society in February, 1872. From time to time Diggles described many birds that he believed to be new, but practically all his species have been adjudged invalid; the only one now recognised is his *Poephila atropygialis* (White-headed Finch), and that, too, seems in danger of disappearing with the advent of the new *Check List*. His work, *The Ornithology of Australia*, followed somewhat on the lines of Gould, and most of the 600 plates he executed, with the aid of his niece, the late Mrs. Cumming,† were very fine. All the unpublished ones are now in the Mitchell Library, Sydney, having been received by that institution from Messrs. Angus and Robertson, publishers, to whom they had been sold by Mr. George Diggles (son), of Brisbane, in the hope of seeing them in book form.‡ Subscribers received

* The place of Coxen's burial having been located through an old newspaper, Mr. Brennan and I visited the neglected spot, thereby paying a long-deferred tribute to a very worthy brother bird-observer. A fading inscription shows the tombstone to have been erected by friends to whom Coxen was "a good Christian and sincere friend." Mrs. Coxen lies in the same grave; she died on 11th August, 1906, at the age of eighty-one years.

† A. J. Campbell states that Diggles's daughter did this work, but Mr. George Diggles informs me that the niece was the chief artist, hand-colouring each plate in each series.

‡ Other notes on Diggles and his work, by Gregory M. Mathews, appear in the "Austral Avian Record," vol. 3, pp. 98-108. With the exception of that article, and A. J. Campbell's warm tribute to Gilbert, no other extended notice of any Queensland ornithologist appears to have been given prior to this paper.

the parts as they were issued, but the work was never completed. It was a hard blow to Diggles, and he says as much in an introduction to papers read before the Queensland Philosophical Society on 29th January, 1874. Seven years had then gone by since he had been compelled to discontinue his work by the subscribers' list falling suddenly from ninety to sixty, and Diggles saw "little immediate hope of a change, so far as bringing out or continuing the work in this country is concerned, and the greater is the pity. . . ."

From this Diggles goes on to discuss the Albert Lyre-bird, and gives some extraordinary information conveyed to him by J. T. Cockerell. The latter, it appears, went to the Coomera Ranges in 1873 for the purpose of procuring specimens of *Menura alberti* (then but recently discovered), and became interested in a mound upon which he saw a male bird. This structure "looked like the mound of a Tallegalla, but was not so large, and differed in having no sticks in its composition. It was a much neater structure." Some aborigines, it is added, "confirmed Mr. Cockerell's suspicions, and asserted positively that the mound was doubtless the workmanship of the bird which he had shot—a fact which had been long known to them—that the eggs were three in number, and were deposited at a depth of a foot or so, were cream coloured, spotted with brown, and not so large as those of the Turkey, as they call it. They informed Mr. Cockerell that the habit of the birds was to make a tunnel right through the mound, so that the young might make their exit at either side. The mound is frequently resorted to by the young birds, and Mr. Arthur Binstead, assisted by some sawyers, some time ago, watched their opportunity and captured four after they had entered the mound. Mr. Binstead took them home and reared them without difficulty."

It is now well known, of course, that all species of Lyre-birds build nests of sticks, in no way resembling the slight mounds upon which the male birds play, and that, moreover, there is only one egg to a clutch in each case. This being borne in mind, it is evident that J. T. Cockerell, and through him Silvester Diggles, were the victims of the aborigines and sawyers of the Coomera in a most elaborate bit of ornithological "leg-pulling."*

With Coxen and Diggles may be associated Waller, Spalding, and Cockerell. Of the last-mentioned worker,

* Worthy to rank with this Lyre-bird information is a "discovery" made by A. C. Grant, author of "Bush Life in Queensland." He speaks of the great size of the nesting mound of the Brush Turkey, and casually adds, "thirty or forty lay their eggs in it!"

probably the most notable Queensland field naturalist of that period, something has already been said. He took many new birds for Gould, and also collected for White, Diggles, and various museums. The chief trip in his rough and romantic life would seem to have been one he made (1871-72) in a small boat called the *Naturalist*, from Brisbane to New Guinea and the Arn Islands in quest of specimens of natural history. He brought back a fine collection, chiefly birds, including many from Cape York.*

An interesting reference to that trip is hidden away in the story of the cruise of the *Basilisk*, a survey ship that was at Cape York fifty years ago. "Whilst here," says Captain Moresby, "we fell in with a lonely waif of society named Cockerell, who has betaken himself to live in a tiny vessel of about eight tons, and, accompanied only by his son and two natives, cruises about these seas as a naturalist, and seems to be happy enough in his own way. His boat was laden with specimens of beautiful birds, and from the Arn Islands, 500 miles west of Somerset, which he had just left, he had brought back some boxes full of Great Birds of Paradise, of which he kindly gave me a specimen." (Then follows a description of the bird.)

It was probably about the same period that Captain Pennefather (quoted earlier) also met Cockerell. Half a century is a long time to think back, but the veteran mariner tells me that he remembers meeting a naturalist and his son, who possessed many bird-skins, cruising near Cape Grafton. There had been a dispute, and the son persuaded Captain Pennefather to allow him a passage back to Brisbane. Probably the Cockerells remained apart after that. I am told by "old hands" that Cockerell, senr., kept an hotel for some time in Brisbane, and afterwards died in Sydney; and that the son was last heard of in connection with a charge of manslaughter.

Concerning Eli Waller, a second professional bird-man of the sixties, I can find very little. He had a taxidermist's shop in Edward street, Brisbane, and, according to Diggles, possessed "a large and valuable collection," and also a "scientific and extensive knowledge of the birds of Australia." Some of that knowledge came out in Waller's discovery (through a Mr. J. McKenzie, timber-getter, Mount Sampson) of the dainty Fig Parrot, which he besought Gould to name after Charles Coxen. With the latter Waller was associated in the discovery of the bower

*Cockerell's name is attached to a rare Northern Honey-eater, *Ptilotis cockerelli*, Gould.

of the Regent-bird, and many other valuable little "finds." Among them was a Grass-Owl (shot near Brisbane), which Diggle described as *Strix walleri*, but which was afterwards sunk as a synonym for *Strix candida*. It would be interesting, by the way, to know what became of Waller's collection. Was it, or any portion thereof, contained in the "many valuable specimens" lost on the ship *Fiery Star*, when that vessel was burnt on her voyage to England on 19th April, 1865? Waller and his artistic son continued to send bird skins and paintings to Gould up to about 1875 (see *Birds of New Guinea*); shortly afterwards, I believe, he left Brisbane for England, and did not return.

Edward Spalding was another collector whose name was applied by Gould to a Queensland bird. Here I cannot do better than quote a personal note given me by Mr. J. O'Neil Brennan. "When I was quite young," Mr. Brennan says, "Ned Spalding's father kept a 'pub' on the bullock-road between Petersham (N.S.W.) and the Glebe Island abattoirs. Spalding, senr., was, I think, a picture-frame maker by trade, and so was Ned; but they were both collectors and taxidermists, too. Before coming to the Queensland Museum as taxidermist, Spalding went various trips collecting. He made several trips for the late Sir Wm. McLeay, to whose private museum he was attached. One of these trips was to North Queensland, where he discovered the 'Chow-chilla,' or Blackheaded Log-runner, which bears his name.* . . . After a short spell at the McLeay museum, Spalding came to our museum, and remained with us until 1893-94, when he fell a victim to the pruning-knife of a Treasurer suffering from financial hysterics."

(To be Continued).

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KOOKABURRA PRANKS.

The Kookaburra or Laughing Jackass, the cheerful feathered friend of the bushman, is one of Australia's most valuable birds, destroying as he does great numbers of snakes and other vermin. But there are occasions when Jacky can make himself a positive nuisance. I remember one of these birds which suddenly evinced a decided preference for chickens as an article of diet, and made serious inroads into a brood. I had the hen and chickens shut up in a wire coop, but unfortunately the mesh was a

* *Orthonyx spaldingi*.

little too large and the chicks could go in and out as they pleased. Jacky was wont to take up a position in a tree above the coop, and woe betide the chick that ventured outside! Jacky would dive down upon him with unerring precision, and one by one they fell victims to his insatiable appetite.

After about half the brood had vanished, I decided to let the hen and chicks out, as I thought the mother might be able to afford them some protection. The brood had not been out of the coop many minutes when Jacky took a header into the midst of them. He had scarcely reached the ground, however, when the old hen struck him. This hen, by the way, was a particularly vicious bird when she had chickens, and was held in great awe by the children.

The disturbance that ensued was like a miniature cyclone, and I had occasional glimpses of the combatants through a whirlwind of dust and feathers. The contest was not of long duration, but during that period Jack was "receiver-general," and his screams brought his brethren hurrying from all directions. The Kookaburra finally became separated from his vicious assailant by being knocked down a steep bank, and lost no time in making good his escape; but it was a very ragged and lopsided Jack that struggled on to the lower branches of a neighbouring tea-tree.

On another occasion I saw a Kookaburra make short work of a small Kingfisher. Jacky had taken up a position on a branch in close proximity to a termites' nest, in which two Kingfishers had made their nest. That these little birds resented his presence was evident by the vicious manner in which they darted and pecked at him, and the click of their beaks was plainly audible. For a time Jacky was kept so busy dodging blows that he would not have seen a full-grown carpet snake on the ground, let alone a worm. He stood these indignities for some time, till at last his patience became exhausted, and as one of the Kingfishers darted at him he grabbed his small relation in his powerful beak and hammered the life out of him on a limb.

—H. C. HAYES, Kyogle, N.S.W.



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PROCEEDINGS.

July to September, 1922.

July 17.—The chief subject for the evening was a lecture on Geology and Evolution, by Mr. W. H. Bryan, M.Sc. The lecturer sketched evolution as a genealogical tree, and used fossil forms of life to help out the analogy. Many interesting lantern slides were shown, illustrating chiefly the early records of animal life.

August 21.—Correspondence included a letter from the Agricultural Department, intimating the provision of a heavy penalty for the use of night lights in shooting animals. A general discussion on fauna protection followed a report by Mr. A. H. Chisholm on the position in regard to the export of Australian fauna, and it was decided to protest to the Federal authorities on the point. Arrangements were also entered upon for the protection of the wild life on the Sandgate lagoons and Hercules Bank, near the mouth of the Brisbane River.

Interesting exhibits were shown by Mrs. C. A. Messmer, Messrs. W. R. Colledge, R. L. Higgins, R. Illidge, and C. T. White. Mr. Illidge contributed some informative notes on birds seen in his garden at Bulimba, and Mr. Chisholm showed slides and told of the "strange, eventful history" of the Paradise Parrot (*Psephotus pulcherri-mus*), which, after being missed for about 25 years, was recently discovered and photographed. Mr. W. D. Francis (Assistant Government Botanist), was congratulated on his marriage.

September 9-11.—Approximately 20 members of the Club enjoyed an interesting week-end in the neighbourhood of the Glass House Mountains. They found the neighbourhood of Beerwah to be very prolific in wild flowers. Interest was added the expedition by a lecturette, which the Government Botanist, Mr. C. T. White, delivered at Beerwah on Saturday evening. Mr.

White pointed out that the sandy, peaty country of the North Coast, usually known as "wallum," extended right across to West Australia, and that it embraced a large number of plants belonging only to Australia. Among these endemic plants he cited the pea-bearers as being a large group. The wattles, it was mentioned, have seeds that strongly resist drought, and which need fire or other keen agency to break the hard coating of enamel surrounding them. Touching on the proteaceous plants, Mr. White observed that many of these had their stronghold in West Australia and South Africa. Similarly he pointed out affinities between several Queensland Proteaceae and others found in South America. Other interesting notes were the fact that there are some 10 different kinds of *Boronia* in Queensland, and the fact that citron-scented trees, of the myrtaceous group, appear to be confined to the sub-tropics. This citron odour is very pronounced in one of the tea-trees (*Leptospermum Liversidgei*) common at Beerwah.

WILD FLOWER SHOW.

Records were broken in connection with the annual exhibition of wild flowers and other features of natural history, which Club members conducted in the Albert Hall, Brisbane, on the night of September 30th. The attendance of the public was the largest yet achieved, and the display of wild flowers, as well as the range of other exhibits, exceeded previous efforts.

The exhibition was opened by the Mayor of Brisbane (Alderman H. J. Diddams), who was introduced and welcomed by the president of the club (Mr. R. L. Higgins). The Mayor complimented the naturalists on the improved exhibition, and spoke of the value of their work in bringing a knowledge of natural history to city dwellers. He added a word of advice to the effect that action should be taken to safeguard plants that were being devastated—perhaps sanctuaries could be created on the lines of those designed to save native birds and animals.

South Australia, Victoria, and New South Wales again figured largely in the exhibition, the naturalists' clubs and Botanic Gardens in those States reciprocating Queensland favours by sending good collections of cut wild flowers. Perhaps the interstate flowers that attracted

most attention were the *Tetrathecas* from South Australia, the *Boroniads* from Victoria, and the waratahs from New South Wales. Eastern Queensland was represented from Stanthorpe in the south to Rockhampton in the north. Particular interest attached to the exhibits from the South Coast areas, Tambourine Mountain, and the area between lower Cedar Creek and Beenleigh (Mr. and Mrs. Curtis), showing especially well. From Tambourine Mountain alone there were over a dozen different species of orchids, these including such pretty ground dwellers as the *Caladenias*, *Diuris*, and *Gastrodiums*, and such species from the rocks and trees as the regal king orchid (rock lily), the shell-pink orchid (*Dendrobium kingianum*), and several other *Dendrobiums*, as well as some of the lovely white-flowering *Sarcochilus* orchids. The most notable orchids from the lowlands were the big *Phaius grandifolius*. Another mountain flower of prominence was the crimson spear lily (*Doryanthes palmeri*), several clusters of which were sent by Mr. S. Crosby, from Mount Mistake. Areas closer to Brisbane were also well represented. City members of the club had been abroad on Friday and Saturday, and had secured a good, judicious harvest from Sunnybank and other localities. The Government Botanist (Mr. C. T. White), was in general charge of the wild flower section.

Contributors to the wild-flower exhibits were:—

Interstate.—Botanic Gardens, Sydney; Naturalists' Society, Sydney, and Miss Woodbury, Wyong,—Wild flowers from New South Wales; Mr. Hayes, Kyogle, and Miss M. A. Campbell, Piccabean—Wild flowers from the Northern Rivers District, N.S.W. Botanic Gardens, Melbourne—Collection of Australian native flowers, mostly Victorian. Mr. Stubbs, Belgrave, Vic.—Victorian specimens. Botanic Gardens, Adelaide, and South Australian Field Naturalists' Club—Collection from Adelaide District and Mount Lofty Ranges, S. Aus.

Queensland.—Mr. L. W. B. McBeth, Mr. Bert Williams, Mrs. E. W. Bick, Mr. J. A. Bennett, and Mrs. Slaughter—Specimens from the Stanthorpe district. Mr. W. B. Hamilton, Mr. Walter Harwood, and Miss Little—wild flowers from Stradbroke Island. Mr. W. Stewart and Mr. C. Popple—wild flowers from Roma. Mrs. Nairn, Mr. J. O'N. Brenan, Dr. G. Comyn, Mrs. Messmer, and Mrs. Mayo—specimens from the Brisbane district. Also wild flowers from their respective districts from the fol-

lowing—Head Teacher, State School, Glass House Mountains. Mrs. Dunning, Kilcoy; Mr. J. E. A. Wood, The Caves, Rockhampton; S. W. Crosby, Townshend (Spear Lily from Mount Mistake); Mrs. Taylor, Caloundra. Mr. and Mrs. Curtis, Albert River; Mr. C. and Miss Hilda Geissmann (Tambourine Mountain).

Photographs of natural beauties were shown in profusion. Mr. D. W. Gankrodger, of Aliee Downs, Blackall, again exhibited a fine series of studies of wild birds at their nests, and further interesting photographs, chiefly of birds of coastal areas, were shown by Mr. A. H. Chisholm. Mr. R. L. Higgins had some nice scenic views, and also some dainty coloured photographs of Queensland wild flowers. Further attractive pictures were exhibited by Mr. W. J. Sanderson and Capt. C. E. Fryer. An album filled with beautiful studies of wild flowers (chiefly orchids), was exhibited by Miss Hilda Geissmann, of Tambourine Mountain.

Visitors were keenly interested in the microscopic section where Messrs. W. R. Colledge, W. M. Tanner, and C. Holland were in charge; in the entomological exhibits by Mr. Franzen and Mr. R. Illidge, and in comprehensive displays made by the Amateur Fishermen's Association, and a fine lot of timber products provided by the State Forestry Department. Several birds' nests (gathered after use) were shown by Mr. Stevenson. A collection of shells was staged by Mr. J. C. Smith, and a large block of petrified wood by Prof. S. B. J. Skertchly.

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NEW MEMBERS.

Club members are reminded that there are quite a number of people who are fully sympathetic with the aims and objects of the Club and would show this practically if they were asked by joining the Club and helping its work along with their annual subscriptions of ten shillings. Nearly all the new members enrolled during the present year have been proposed by one member. Will you try and secure at least one new member a year? If all did this we could look forward with confidence to a permanent home for the Club and its library in the near future.

BIRDS OF STRADBROKE ISLAND.

NOTED DURING LONG HOLIDAY EXCURSIONS
FROM ABOUT 1869 TO 1880.

By. R. ILLIDGE, Brisbane.

In Stradbroke Island may be included the islands on its western side up to the main channel to Southport, which will for this purpose form its boundary as far as that town, which lies opposite its extreme southern end. This southern end has a small scrub a few hundred yards wide and about a mile or so long, facing the channel, part of which still remains, but in a much mutilated state, and mostly surveyed into allotments for building purposes. It is this part which was most interesting as regards bird life. It was only a short distance from the vine scrubs of Nerang Creek, and many species in a few minutes could cover the few miles intervening, especially Pigeons.

Being the owner of a small sailing boat, I soon obtained a fair knowledge of the island and its dependencies from Amity Point east to Point Lookout (always doing this part on foot), and south from Amity past Dunwich, Canaipa, Tuleen (Jumpinpin), and Currigee to Moon-darewa (Porpoise Point) opposite Nerang Creek (Southport). The only parts not consisting of sand were Dunwich and Point Lookout, the latter being particularly rocky.

At Canaipa, a little sandy beach and good fresh water close to camp enabled us to get across to the big lagoon now known as the Eighteen-mile Lagoon. The distance, though not great, was troublesome on account of the prickly nature of the undergrowth through which we had to force a way. We reached a high bluff from which a fine view of the lagoon was obtained, both north and south, with sand-dunes separating it from the sea on its eastern side. It looked like a large plain with small lakes scattered over its surface. On these small open expanses innumerable birds of many kinds, Black Swans predominating, were seen. White Egrets were specially noticeable, shining in the sun, as also a variety of other wading and aquatic birds, including Ducks of many species.

On going down to the foot of the bluff, we found ourselves confronted with high reeds which shut out all view, and a treacherous bog with streams of fine clear water flowing towards Swan Bay. Having found a wallaby track, and thinking it might lead to the ocean beach, we

followed it, but it only led to a convenient drinking-place. Returning to the top of the bluff, we travelled north for three or four miles, but as the lagoon was evidently not crossable we gave up and returned. The country was poor in birds, and beyond a solitary Butcher-bird and some Honey-eaters (as the Brush Wattle-bird and the White-cheeked Honey-eater) it was almost lifeless. Wallabies were the only animals, and they were scarce. As we got near our camp, however, the calls of others (as the Brown Honey-eater, Leatherhead, Babbler, Sacred Kingfisher, and some shore birds) were heard.

A few years later another trip was made across, again without result; but as on this last occasion the season was very dry we found the bush much burnt but the lagoon apparently unaltered.

Now, all these little trips to various parts of Stradbroke Island at different seasons gave a fair knowledge of its bird life, but, be it remembered, by no means a perfect one.

As the land birds of Stradbroke between Dunwich and Amity have been fairly well written up by other observers, I will, with a few exceptions, confine myself to the southern end, previously mentioned as having a small area of jungle, some of the denizens of which served greatly to vary the salt junk menu of old boating days. Chief amongst these were the Magnificent Pigeon (also known as Wampoo from its call), the Topknot or Flock Pigeon, the Large-tailed (Brown) Pigeon, and the Little Green Pigeon (the latter also noted by some of us at last Easter camp near Dunwich). All of these were excellent in our stews or as grills. How we should like to see some of these, as the Magnificent Pigeon, amongst us again—not to eat, but to admire their splendid plumage and graceful forms!* It is noteworthy that the Magnificent Pigeon, when quiet in one of the large-leaved figs, is difficult to see, for its plumage harmonizes with the foliage, whereas when feeding amongst the myrtle berries it is very conspicuous.

Other birds of this part were two Cuckoos, the Fan-tailed and Bronze Cuckoos; also a Parrot, the Musk Lorikeet. This Lorikeet I have seen in hundreds on the tea-trees in blossom on the Southport side, so that its appearance across the few hundred yards of channel is partly explainable, though cases are known of a comparatively narrow river forming a sharp dividing line. Of Honey-eaters, the

* The Magnificent Pigeon, or Wampoo (*Megaloprepia magnifica*) is now totally protected by law.—Eds.

Yellow-eared and the Fuscous, also the Silver-eye, do not appear elsewhere on Stradbroke, and the same may be said of the Rufous-breasted Thickhead (Whistler) and the Yellow-tailed Robin. Here also were Regent-birds, Cat-birds, and Satin Bower-birds. Of Fly-catchers, the Shining, the Spectacled, and the Black-faced were well in evidence, as also the Rufous and White-shafted Fantails. (The latter I have also seen on Dunwich side.) The Orange-backed Wren was also there; but though plentiful on Southport side, the channel appears to have been an effectual barrier to the Silvery-blue Wren. Amongst Robins, the Large-headed and the Hooded species were found; the latter rare and not seen actually in the scrub. Another bird quite common was the Pied Caterpillar-eater; also two Shrike Thrushes, the Harmonious and Buff-breasted—the first on the margin and the latter usually busily raking in the bird-nest and stag-horn ferns.

The Fish-tail or Spangled Drongo Shrike and the Green Oriole are also found both here and at Dunwich. The Black Magpie (Currawong) I do not remember as being elsewhere than at the southern end, though I have heard that it occurs on Russell Island. This bird, though undoubtedly destructive amongst the fruit orchards, is of service amongst the insect tribes; and, in fact, any person not knowing its habits and relying only on the form of the bill would say that it lived on insects, spiders, and probably small birds and their eggs. Its calls, when heard amongst the hills and mountains, are rich and melodious, and very varied. There is much yet to be learnt about the voices of our birds, for if you have the patience to sit down under a tree where they are resting, and keep quiet, you will hear the birds talk to one another in most pleasing tones, and be surprised to find that they also imitate others.

Amongst the raptorial birds inhabiting this small section of the island, and of which no previous mention has been made, was that great Owl well named the Powerful Owl. Its prey may have consisted of the ring-tailed opossum, which at that time existed on the island, for I found the drey (nest) in one of the tea-trees which formed the major part of the vegetation of the swamp in the centre of the scrub, though I did not see the animals. The usual prey of these birds, which seem to hunt in couples, consisted almost exclusively of the larger opossums and flying squirrels, scrub wallabies and paddymelons; even the native bear (koala) is not immune. The Owls' awful calls at night, combined sometimes with the screams of their victims, are not easily forgotten. When their haunts, revealed by the droppings, are invaded, and you look up to find the birds

and meet the ferocious glances of their eyes and note the enormous talons, it is all rather startling. The repellant malignancy with which they survey you ere departing is indescribable.*

The aquatic and marine birds, of which probably an almost equal number frequents the swamps and great lagoons of Stradbroke, its miles of sand and mud-flats facing the Bay, uncovered at low water and rich in marine life of all kinds, forming a vast feeding ground. On its ocean side are great sandy beaches extending from Amity Point east to Point Lookout, thence southwards to Moondarewa, opposite Southport, a distance of forty miles. Here many true oceanic birds are frequent visitors, amongst these the beautiful Tropic-bird, also the Frigate-bird.

A careful estimate of the total number of birds is approximately 175 species. I have noted 94 species of land birds, which with (say) 25 species yet to be recorded make 119 species, to which add aquatic birds, waders, sea and shore birds (say) 75 species, or in all 194 species. From this deduct, for species which through altered conditions herein mentioned no longer frequent the island (say) 20 species—total 174 species.

[Mr. Illidge states that he is willing to distribute, free, copies of the list of the land birds.—Eds.]

MANNA FROM GUM-TREES.

A recent paragraph on this subject prompts Mrs. Childs, of Cooroy, to relate an interesting reminiscence. About 22 years ago, when a young girl, she lived at Harlaxton (near Toowoomba), and in a paddock adjoining her father's property were a number of young gum-trees that produced manna. The children used to gather this manna (that was what they called it) from under the trees, where it lay in sugar-like pellets, very sweet to taste. It also formed on the branches and trunk of the trees like melted sugar dried. The writer adds that she explored most parts of the Toowoomba range, but never saw manna outside the particular paddocks. Another observation on the subject comes from Mr. E. R. Caldwell. Writing from Taroom, he says that wood-swallows are there in thousands, and are feasting on the "manna" on trees. "In fact, all the birds, down to crows and cockatoos, seem to exist on this sugary excreescence. With the dry conditions, insect life is scarce, and the pear undoubtedly is interfering with birds as well as with insects."—From the Nature Notes column of the Brisbane "Daily Mail."

*The Powerful Owl (*Ninox strenua*) appears to have become very rare. It is now seldom reported.—Eds.

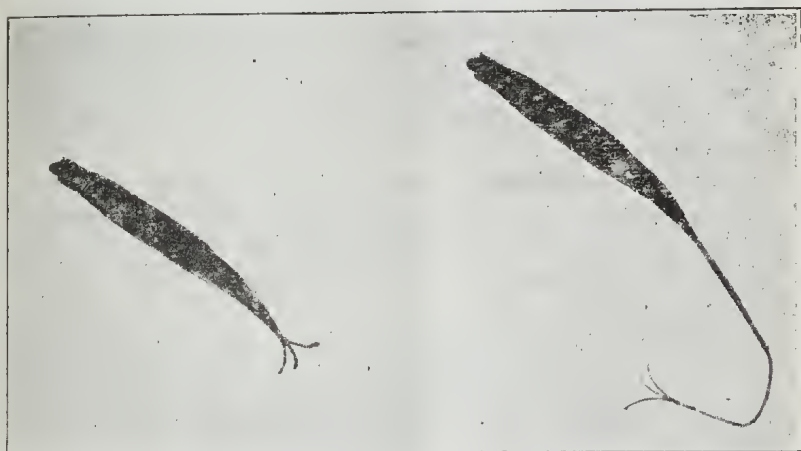
A TELESCOPING ROTIFER.

By W. R. COLLEDGE.

In the early Spring, near the bottom of the pool, is frequently found the curious rotifer *Neptunius*. Externally, it resembles the common *R vulgaris*, but on closer examination the lower portion of the body is seen to consist of six tubular joints telescoping into each other. Usually they are carried closed up in the interior of the

Rotifer Actinurus Neptunius

Magnified 66 times.



Closed.

Extended.

body, the end of the innermost, with its three outwardly curved toes forming the tail. Too small to be seen without the aid of a microscope, it possesses in addition to a complete muscular and nervous system, also some form of hydraulic pump under most efficient control. It swims freely by using the cilia on the head, but the movement is arrested at any time by touching an object with the tip of one of the toes. A spot of mucus, insoluble in water, exudes, and acts as an elastic anchor. It spins round as on a pivot, searching the space for food, then, pushing out a joint, and so acquiring more length, it searches the larger area, and so joint after joint is pushed out until it is three times the length it appeared to be originally. A sudden jerk breaks the adhesion, the joints close up, and it sails away to pastures new.

SOME CITY MOTHS.

(Heterocerous Lepidoptera taken on ceiling and walls of a house at Bulimba and garden round same during season, 1921.)

BY R. ILLIDGE.

These comprise a proportion only of the most noteworthy as regards habits, destructive or otherwise, of the insects captured, and serve to show what may be done with electric or acetylene light, and an examination of the foliage and flowers of the plants of the garden in making up a small collection without leaving the precincts of home. The total from this restricted area is 54 species, and of these I have marked 17 for special reference.

No. 1. *Spilosoma fuscinula* (the omnivorous pest).—The larva of this, a very hairy creature, dark brown with a very distinct light dorsal line, is amongst the most destructive of garden insects, scarcely anything being exempt.

No. 2. *Teara contraria* is not a garden pest, but merely a visitor attracted by the light. It is well known in larval state as being gregarious and building a large communal silken nest for protection during the day at the foot of its food plant (*Acacia*, sp.), from which it frequently entirely strips the leaves (phyllodia).

No. 3. *Orgyia postica*.—A pest of begonia, geranium, and other plants. Caterpillar, hairy and crested. Female moth apterous and lays its eggs in a mass, covering them with silken web interspersed with hairs from its large body.

No. 4. *Oxyodes tricolor*.—An unusual visitor, with very variable forewings resembling leaves in various stages of decay with fungoid growths.

No. 5. *Deiopeia pulchella*.—Cosmopolitan in distribution, its food plant here is the rattle pod (*Crotalaria*).

No. 6. *Ophiusa (Aehaea) melicerte* is a pest of the castor-oil plant (*Ricinus communis*) and should this plant be extensively cultivated for extraction of the oil will require watching, as I have known it strip the leaves completely. It also attacks other plants of the *Crotonaceae*.

as *Codiaeum* (Croton of the horticulturists' shops) and *Acalypha*. It also is an example of variation like No. 4.

No. 7. *Nyctemera secundiana* (the cineraria pest) attacks *Compositae*, especially of the tribe *Senecionideae*, and has found that the beautiful introduced cineraria is particularly to its taste, as also colts-foot.

No. 8. *Prodenia littoralis*, is another common garden pest. The specimen exhibited is a male; the female is larger and not quite so well marked.

No. 9. *Zinckenia recurvalis* (Amaranthus pest).—The caterpillar of this distinctly marked moth plays havoc amongst the *Celosias* and *Amaranthus*, the gorgeous foliage of the latter being utterly ruined and rendered so unsightly that they have to be pulled up and destroyed before they reach their full splendour. The insect is a member of the *Pyrilidae* (Pearl Moths).

No. 10. *Iodis pieroides* (an emerald moth).—This moth does not occur in sufficient numbers to be termed a pest, but is notable for its strange caterpillar and also the great difference in the sexes. The larva like a bit of jagged, dried-up leaf, may be found on cherry guava, rose, etc., but in the forest on small gum bushes. Its nearest congener is *Iodis insperata* from the South of Australia, sometimes taken in Queensland.

No. 11. *Urolitha (Iodis) bipunctifera* (mango emerald moth) is not infrequent about the walls and ceiling. Judging from the larvae which are found on mango trees, it is widely different from *I. pieroides* and the related *I. metaspila*, *I. partita*, and *I. mariae*, but comes near *Iodis citrolimbaria*.

No. 12. *Phacellura indica* (the pumpkin pyrale or pearl moth).—The caterpillar feeds on the leaves of the pumpkin, but I have not found it sufficiently common to be termed a pest.

No. 13. *Siriocauta testulalis* (the bean pearl moth).—This we found when growing beans of the Fiji variety, on which it proved rather troublesome, but have not noted it on the French or such, which are troubled by that minute fly in stems, the only remedy for which is to pull up the plants and burn them.

No. 14. *Ophiodes tirrhaca* (the *Loranthus* moth).—This does not come into the house, but was bred from larvae taken on *Loranthus longiflorus* parasitic on silky

oaks in garden. Another fine species is also found on *Loranthus*, viz., *Ophiodes parcemocula*, Lucas.

No. 15. *Calogramma festiva* (the festive crinum moth). A very fine and beautifully decorated insect, but its larva, also prettily marked, is of a gregarious nature, and very destructive to crinums, particularly our *C. pedunculatum*. It is a specially disagreeable insect to rear, and in its habits abominably nasty, but has no objectionable smell. We have known it from other *Crinums* and also rarely *Hippeastrum*, but have not found it on other *Amarylliaceae*. There is another moth whose larva feeds gregariously on the Crinum; it is a species of *Brithys*, and may be known from the black and white marbled caterpillar.

No. 16. *Aristeis hepiallella* is not found about the house, but is noteworthy for its curious spiral case formed of silk with fragments of leaves shingled regularly over it. It is found on various gums, but is difficult to rear.

No. 17. *Trichetra mesomelas*.—This insect, with No. 16, is somewhat outside my remarks. Not long ago I found some beautiful hairy larvae, heavily crested dorsally, on a solitary gum tree at Bulimba Point. As I had not far to go for fresh leaves I bred them out and found it to be a not uncommon southern species. I had also obtained a number of pupae of this in the forest on the edge of a sand plain, about 18 miles north of Cunderdin, in West Australia, but did not see the larvae. When they reached the imaginal stage, knowing the species was common, I did not further trouble about them. The fact, however, is interesting as showing the wide range of this as of many other Australian insects.

This concludes the special remarks, though much might be said of other species, several of which are very rare, as for instance, *Eucrostis iocentra* and *Iodis iosticta*, *Atlocentra chloraspis*, *Hypochroma quadril partita* & *Conogythes nubifero*. The emerald moths are a very attractive group, and much more has been learnt about them since the habits of some were first mentioned by me in the Trans. Nat. Hist. Soc. of Q'ld., Vol. 1, 1892/4, p. 85.



BIRD SEEKING IN QUEENSLAND.

By A. H. CHISHOLM, R.A.O.U.

PART 2.

H. C. Rawnsley has been mentioned in association with Coxen and Diggles. He was a Government surveyor, and was keenly interested in the study and preservation of birds. For the old Philosophical Society he read several interesting papers, including one "On the *Menura superba*, Lyre-Bird, or Mountain-Pheasant" (4th August, 1863)—some good notes taken near Illawarra, in New South Wales—and another on "Habits of the Satin-bird" (10th April, 1865), this in amplification of Coxen's paper on the habits of the Regent-bird. Rawnsley seems to have established the first sanctuaries about Brisbane. He was the owner of a house still known as "Witton," situate on a small creek of that name near Indooroopilly. When he lived there—he has been dead some forty years—the place was beautifully environed in scrub and forest, and no shooting was permitted therein.

Rawnsley's name was given by Diggles to a Bower-bird, called *Ptilonorhynchus rawnsleyi*, but the bird was said later to be a hybrid, between the Satin Bower-bird (*P. holosericeus*) and the Regent-bird (*Sericulus melinus*). Certainly the find was a most remarkable one, and Diggles had his opinion of the validity of the species supported by A. C. Gregory.* What Diggles termed "this splendid new species" was submitted to the veteran explorer, who stated that he had seen just such a bird on the Suttor River, a branch of the Burdekin, in 1856. As Gould pointed out, however, it was evident from what Gregory said of the call of this bird that what he had seen was the Black Cuckoo (Koel), after whose call his own suburb of Toowong† was named. No other specimen of the novel bird has ever been found. This objection to the validity of the species, however, is met by Mr. R. Illidge, the oldest of Brisbane bird-students, in the following note:

* Gregory remained in Queensland and became Surveyor-General and a leading public figure. He was first President of the Royal Society of Queensland and President of the Australian Association for the Advancement of Science at its first Brisbane session.

† "Tu-wong" is one of the calls of the male Koel. It was formerly very common about the area that is now Toowong, being attracted by the plenitude of a favourite feeding-tree, the Cockspur-bush, *Cudrania javanensis*.

"I have often thought," he says, "that Rawnsley's bird was the last of a vanished race, as with others of our birds since the white man appeared on the scene." If only for the sake of the romance attached to this little problem—not to speak of the possibility of finding a survivor of the pretty species—I can find it in my heart to wish (not to say believe) that Mr. Illidge is right.

It was not many years afterwards that another pretty little problem of the kind arose, and in this instance Gould himself "fell in," just as Diggles had done with "Rawnsley's Bower-bird" of the Indooroopilly scrub. It was this way: In the year 1874 an employee of Joshua Peter (later Sir Joshua) Bell, of the old-established Jimbour Station, Darling Downs, shot a very beautiful bird, which combined the brilliance and other characters of the King Parrot and the regal Red-winged Parrot. Emerald green, scarlet, golden-yellow, deep blue, greenish blue, and purplish black, all were combined in this lovely and novel creature, whose beauty moved Gould to enthusiasm. "I wish," he wrote, in the *Birds of New Guinea*, 1875 (which included "any species that may be discovered in Australia"), "I wish it were in my power to write a complete history of the splendid Parrot figured in the accompanying plate. All that is at present known is that it was shot, in 1874, a few miles north of the village of Dalby, on the Darling Downs, in Queensland. My first knowledge of its existence was through a life-sized sketch at the hands of the son of Mr. Waller. Since then the actual specimen has been forwarded to me by Mr. Coxen, who has purchased it for the infant museum of Brisbane." From this he goes on to admit the resemblance of the specimen to the King and Red-winged Parrots, but points out that he found the former to be an inhabitant of "brush" (scrub-jungle) while the Red-wing frequented the thinly-timbered open plains. This fact, combined with the differences in flight of the two birds, convinced Gould that the beautiful specimen under notice was not a *lusus*, or hybrid, and so he referred it to the King Parrot genus, under the name of *Aprosmictus insignissimus*, at the same time returning thanks to the Brisbane Museum for its "extreme courtesy" in sending the specimen to England. Alas, this was a case wherein our ornithological Homer nodded! Gould did not know, as we do now, that the King and Red-winged Parrots occasionally meet. Nor did he know, as we do, that they (as well as one or two other species of Parrots) interbreed on rare occasions. His "new" bird, then, was just a hybrid, but a very beautiful

one, as may be seen from the specimen, now mounted, back in its old resting-place, the Queensland Museum.

We come close to the present day when it is mentioned that a further Queensland name to appear in Gould's *Birds of Australia* (Supplement) is that of Kendall Broadbent. There are several in this room who were acquainted with Mr. Broadbent, and all agree that he was one of the soundest and most thorough field naturalists Australia has known. Born in Yorkshire in 1837, Broadbent came to Victoria with his father, Joseph Broadbent, and other members of the family in 1853. For several years he worked with his father at contracting, between whiles studying natural history, particularly ornithology. His first success came when he secured what proved to be a new Bristle-bird, at a spot 24 miles from Portland, Victoria. This bird was called by Professor McCoy, of the Melbourne Museum, *Sphenura broadbenti*, and the skin was loaned to Gould for illustration.

From the sixties onward Broadbent followed natural history pursuits for a livelihood, and undertook several missions to the North on behalf of museums and private gentlemen. He was one of the survivors of the brig *Maria*, which was wrecked on Bramble Reef, off Illichinbrook Island, in February, 1871. (In that rescue the *Basilisk* took a notable part.) In 1881 Broadbent was appointed taxidermist to the Queensland Museum, and from that time until the end of the century he made many important trips throughout various parts of the State. He took quite a number of new birds, one of which, a North Queensland species, first taken in 1889, still is known as "Broadbent's Ground-Thrush." He wrote, too, numerous papers on the subject, notable among them being treatises on the birds of Cardwell, Cape York, Bellenden-Ker, Central Queensland, and Chinchilla. Several of his papers were printed in the proceedings of the old Natural History Society, the precursor of the Field Naturalists' Club; others appeared in the Proceedings of the Royal Society; and at least one was published in the *Ibis*, the journal of the British Ornithologists' Union. Broadbent lived to be honoured by the P. A. O. U. when members visited Queensland in 1910; he died in the following year. His was a notable career in Queensland ornithology; he was not a writer of books, but could wax very entertaining in talking of his life-study.

Closely associated with Broadbent's name is that of Charles W. De Vis, for long curator of the Queensland Museum. De Vis's work was chiefly systematic, and it was highly valued among the scientists of other countries.

for its exactitude. He it was who scientifically described the new tropical and sub-tropical birds taken by Broadbent, among which may be mentioned such fine discoveries as the Golden Bower-bird (*Prionodura newtoniana*) and the Fern-bird (*Oreoscopus gutturalis*).

Quite an interesting scrap of history attaches to the finding of the remarkable Golden Bower-bird. Latterly regarded as "one of the three handsomest birds in Australia," it was first known from a dull-coloured immature specimen, taken by Broadbent in the wild valley of the Herbert in 1882, and De Vis felt impelled to tender a mild apology for its plainness. "In honouring this Bower-bird with the name of Professor Newton," he wrote,* "it is hoped that the interest attaching to it will be accepted as an equivalent for its plentiful lack of colour." The awakening came seven years later. Mr. A. Meston, during his expedition to Mount Bellenden-Ker in 1889, shot a beautiful bird which De Vis pronounced to be new, and which he named *Corymbicola mestoni*, Meston's Bower-bird. That deduction was wrong. Broadbent took one of the regal golden-feathered birds a day or two after Meston, and proved it to be the adult of his *Prionodura newtoniana*, the extraordinary creature that built "gunyahs" in lieu of bowers. Accordingly, the synonymic name was dropped, and the fine species has since been known in the vernacular as Newton's, or the Golden Bower-bird. There is a good series of the species mounted at a "gunyah" in the Queensland Museum. It is notable there that the yellowish-gold of the male's has faded considerably, whereas the reddish-gold of Regent-birds, in a case close by, is still warm and rich.

An illuminating account of the "discovery" of De Vis himself is given by Mr. Brennan, who says: "During the eighties the trustees of the Queensland Museum were looking out for a curator, and Price Fletcher (then agricultural editor of the *Queenslander* and the writer of *Notes by a Naturalist*) drew the attention of the late Archibald Archer and Albert Norton, both trustees of the museum, to contributions in his Nature column over the name of 'Thickthorn.' It was decided that 'Thickthorn' was worth looking up, and as Mr. Norton was member for Port Curtis, in some remote part of which 'Thickthorn' was hidden away, Mr. Norton undertook to find him. That is how De Vis became curator. My authority for all this was Price Fletcher. De Vis was a very retiring man. He lived for years at Oxley, and

* Proceedings, Linnean Society, N.S.W., 1882, p. 562

travelled into his work by a train that passed Toowong at 7 a.m., so he must have left home at a very early hour, for he lived some miles from the Oxley station. He went home about 5 p.m., and this was repeated every day, including Sundays. If I may express an opinion, Mr. De Vis was a very able man, chiefly among fossils,* but of too retiring a disposition to make a museum popular. He loved his work, and practically died in harness."

The Price Fletcher quoted above was a graphic writer on popular natural history. He is long since deceased, but his mantle has fallen upon his daughter, Miss J. A. Fletcher, a Tasmanian school teacher, who knows birds very well and has written several Nature-books for children. Of Fletcher, Mr. Brennan writes:—

" 'A Bush Naturalist' was, I believe, in the early part of his life a farmer in Victoria. He succeeded Major A. J. Boyd as agricultural editor of the *Queenslander* in 1887 or 1888. Fletcher loved Nature, particularly birds. He lived for a time in a house near Captain Simpson's gate, down past the entrance to the Mount Coot-tha reserve. There were many birds there at that time, as Simpson's Scrub was then standing. I remember the Satin Bowerbirds used to steal nearly all Fletcher's tomatoes. Fletcher's notes contained from time to time some very taking items. I remember one, 'Flight perfected—the Spine-tailed Swift'; another, 'How I got up Mount Kosciuszko'; also an account of how he got down again. What struck Fletcher as remarkable was the finding of a pair of Australian Larks right on the top of the mountain. I wonder what he would say if he could see the place to-day! Another interesting item was his description of the White Corella in Central Queensland. Fletcher left us about the time Gresley Lukin gave up the management of the *Queenslander*, when the latter was probably the best weekly in Australasia. He went South, but has since gone 'West.' "

We pass now to three gentlemen, happily still with us, who constitute a distinct link between the men of old and the present day, and to whom I offer the tribute of youth. I refer to Messrs. R. Illidge, J. O'Neil Brennan, and H. Tryon,† none of whom was born in Queensland, but all of whom have resided here for varying periods up to sixty-three years.

* De Vis described, in the "Annals of the Queensland Museum," No. 6, pp. 3-20, a number of fossil birds taken on Dr. J. W. Gregory's expedition into the interior of Australia. 1901-02.

† All three were present at the reading of this paper.

Mr. Illidge was born in London, and came to Australia as a boy with his parents, arriving in Sydney in 1857. In 1859, when the lad was nine years of age, he was brought to Moreton Bay, then the centre of a struggle for separation from New South Wales; and here he has been ever since. The leaning towards natural history must have come to Mr. Illidge early; he remembers that when he did not happen to be picked for a cricket or football team, a run out to Kelvin Grove was the great solace. About 1863 he spent six months or so on Clifton sheep station, Darling Downs, where he was made interested in birds. This interest brought him into touch with Diggles, Coxen, and other pioneer ornithologists. In later years Mr. Illidge learned to prepare specimens in a masterly manner, and his numerous trips about the South Queensland scrubs gave him a good general knowledge of the birds there, a knowledge that he has ever been willing, in his unobtrusive way, to draw upon for the benefit of others.

Mr. Brennan, a native of Sydney—the son of a Crown Prosecutor in New South Wales—came to Brisbane as a youth of sixteen in the year 1872, and has since had an interesting career as Chief Immigration Officer for Queensland. He has never aspired to be anything in the nature of a cabinet or scientific naturalist, but he is one of the best of field observers, and during the course of many sporting and other trips afield, in widely varying parts of Queensland, he has picked up a wealth of Nature knowledge which a remarkably retentive memory enables him to store. A little lecturette, into which he was coaxed last year, on “Queensland’s Game-Birds” was full of original matter. Mr. Brennan was slightly acquainted with such notable “old-timers” as Coxen, Cockerell, and Waller.

Mr. Tryon, like the others, needs little introduction to this audience. The son of an old English family, and a nephew of Lieutenant O’Bree, of H.M.S. *Rattlesnake*, he went to New Zealand at an early age, and, after acquiring a good grasp of the natural history of that country, arrived in Queensland in 1883. In the course of a long career as Government Entomologist, Mr. Tryon has acquired also a sound knowledge of Queensland birds, which has frequently been at the disposal of his department, the Royal Society, the old Natural History Society (of which he was president, and Mr. Illidge secretary, in 1892), the Field Naturalists’ Club, and other bodies. He did much in encouraging and assisting Kendall Broadbent in the production of his papers, a fact which is freely acknowledged in the articles referred to. And even now,

taking all aspects of Australian natural history, both field and cabinet, into consideration, it is doubtful whether there is any naturalist who possesses as broad a knowledge as Henry Tryon.

There is one other naturalist, of seventy years, who ranks high in the history of bird study in Queensland. He has never resided in Brisbane, his whole experience in this State having been gained in the rich North. I refer to Mr. E. J. Banfield, of Dunk Island. Twenty-five years ago Mr. Banfield, then engaged upon a Townsville newspaper, became very sick, and went to Dunk Island, as a last resort. There health came back to him, and there he and his little wife have been living very rationally ever since. Whatever "The Beachcomber" has lost in the way of human society has been repaid him by the companionship of Nature, and around the birds in particular he has written many eloquent sketches in his three well-known books.* No one has done more to make the birds of our great North-land popularly known.

How fitting it is, too, that such a bird-lover should be stationed against Rockingham Bay! It was on Dunk Island that Macgillivray did memorable work nearly eighty years ago, and it was the same locality (with dreamy little Cardwell as a centre) that witnessed the activities of the naturalists of the *Fly*, the *Rattlesnake*, and the *Tam o' Shanter*. When it is added that Cardwell has been, variously, the headquarters of Ramsay, Campbell, Lunnholtz, Broadbent, and others, it will be recognised that the district is the most notable one in Queensland from the ornithological viewpoint.

There are one or two others to be mentioned, and we have done with residents of Queensland prominent in ornithology. Anthony Alder (a capable artist), W. J. Weatherill (who discovered, and named the overlooked "Brisbane Canary," *Gerygone cantator*), and J. Colclough have all been attached to the Queensland Museum as taxidermists or collectors. Hermann Lau, a correspondent of Campbell, wrote much of interest about the birds in the course of minstrel wanderings in Southern Queensland. E. M. Cornwall, now of Mackay, is another who gave Campbell much information about North Queensland birds; he succeeded H. Tryon as State secretary of the R.A.O.U. Gregory M. Mathews, now celebrated for cabinet research work in Australian ornithology (in England), and the compiler of a monumental work, *The Birds of Australia*,

* "Confessions of a Beachcomber," "My Tropic Isle," "Tropic Days,"

spent several years in Queensland at no distant date; he was engaged on a station property near Charters Towers, but seems, strangely enough, to have taken only scant interest in birds at that period.

Later arrivals in the field are Messrs. F. L. Berney, an Englishman who has learned much of West Queensland birds in the course of several years in pastoral pursuits; W. G. and R. C. Harvey, of Mackay, young fellows who have developed into expert photographers of birds; and D. W. Gaukrodger, of Blackall. It is very fitting that Mr. Gaukrodger, who, though only a "recruit," is doing fine work in the photographing of birds, should be stationed at Alice Downs, the scene of Mitchell's explorations in the forties, and a district visited by Leichhardt, Gilbert, Gregory, Elsey, Lumloltz, and Favenc. In addition, there are many good bush naturalists who are not so well known as they deserve to be. Notable among them is Mr. Walter Petrie (of the Queensland Forest Service and a son of the famous Tom Petrie), who is certainly one of the cleverest imitators of bird-calls known to Australia.

As a matter of course, there are several books dealing with various phases of settlement in Queensland that have more or less interesting references to the birds. *Tom Petrie's Reminiscences* is one such; Dr. John Dunmore Lang's championship of Queensland as "the future cotton field of Great Britain" is another. *Bush Life in Queensland*, by A. C. Grant (London, 1888) has some entertaining notes on the wonderful Bower-birds of the interior. A book of a similar nature is *Wild Life and Adventure in the Australian Bush*, by Arthur Nicholls, F.G.S., F.R.G.S., a record of squatting experiences about the Maranoa and northward during the sixties and seventies. One of Nicholls's stories concerns the capture of a bushranger, whose presence in a patch of scrub had been made known to pursuers by the clatter of a pair of Kookaburras. According to Nicholls, the comment of the bushranger was definite. "If it hadn't been for them —— birds," he said, "you and all your black devils would never have fetched me alive out of that scrub!"

There are, probably, various other books dealing with life in Queensland in which passing attention has been given to birds, but the ones mentioned above will serve as examples. Some productions of the kind make unpleasant reading because of the lists of birds which the authors assisted to slaughter; in several cases the birds were shot while breeding.

Queensland societies interested in natural history have already been referred to—the old Philosophical Society as the forerunner of the Royal Society, and the Natural History Society as the precursor of the Field Naturalists' Club. The Royal Australasian Ornithologists' Union has had Queenslanders as members ever since its formation twenty years ago—never so many as at present—and on two occasions (1910 and 1919) interstate conferences and outings have been held in this State. The Central Queensland Native Birds Protection Association has also been doing good work, in the protective sphere, for a number of years. No society, however, has done so much to encourage the protection and study of birds in Queensland as the Gould League of Bird-lovers. This body has carried on very active propaganda work among the children and teachers of the State during the last five years, and it is hoped that its influence will be felt to a greater extent through the extension of its scope, as a Nature-lovers' League. It was partly due to the efforts of these bodies that the Queensland Parliament passed, during the session of 1921, an up-to-date Animals and Birds Act, replacing the obsolete legislation of 1878 and later.

What the future holds in store for the birds of Queensland is problematical. It is inevitable that many species must fail against civilisation (including the inroads of introduced birds), but it may be that many will be saved through the gracious influence of National Parks and sanctuaries generally. Certainly these native birds are worth saving, if only because of their prominence among the birds of the world, both in novelty and variety. Europe has been very much better explored than Queensland, but, with a slightly larger area, it has at least 100 species less than this State, and few so beautiful.

[Since the foregoing paper was written my attention has been called to a series of Records of Australian Botanists, collected by Mr. J. H. Maiden, Government Botanist of New South Wales, and published variously in the Journals of the Royal Society of New South Wales (1908), the Australian Association for the Advancement of Science (1912), and other mediums. Many of the naturalists treated by Mr. Maiden were both botanists and ornithologists, and he has, in his indefatigable way, got together many interesting notes concerning them from obscure quarters. Some of these follow: Frederick Strange was born in Norfolk (England), about 1826, and was killed by blacks at the Percy Islands, Queensland, on 15th October, 1854. He collected first in South Australia, and, in 1841, he "examined all the country from Cape Howe to Wide Bay." His son, Mr. F. R. Strange, of Sydney, retained possession of many of his ornithological papers.

Benjamin Bynoe, of the *Beagle*, was born in 1803, retired from the service in 1863, and died in England on 13th November, 1865. John Macgillivray, of the *Rattlesnake*, died in Sydney on 6th June, 1868, shortly after returning from an expedition to the Richmond River. James Fowler Wilcox was born in Somersetshire, 2nd February, 1823; arrived in Sydney, 1823; and died at South Grafton (New South Wales), 11th July, 1881. He was on board the *Rattlesnake* from December, 1846, to 1850. Later, he was engaged in business in Sydney for five years, and in 1857 he settled at South Grafton. The date of the death of Wilcox calls attention to the fact that a comparatively large number of men prominent in Australian ornithology (including John Gould) died in the neighbourhood of the year 1880.]

[CONCLUDED.]

LIBRARY EXCHANGES.

The following additions have recently been made to the Club's library:—

National Museum of Victoria.—Guide to Australian Ethnological Collection, by Sir Baldwin Spencer; 3rd edition, with 33 plates.

Victorian Naturalist, Vol. XXXIX., No. 6, October, 1922.

Spolia Zeylanica, issued from the Colombo Museum, Vol. XI., contents and index.

United Empire, Journal of Roy. Col. Institute, Vol. XLII., No. 6, June, 1922.

Selborne Magazine and Nature Notes, Vol. XXIX., No. 349, Feb.-May, 1922.

Scientific Australian, Vol. XXVIII., No. 6, Sept., 1922.

American Midland Naturalist, issued by University of Notre Dame, Indiana, Vol. VIII., No. 3, May, 1922.

(This number contains two interesting articles on Bird Migration.)

Journal of Conchology, Vol. XVI., No. 9, June, 1922.

Ohio Journal of Science, Vol. XXII., No. 5, March, 1922. Contains the concluding part of a series of papers by John L. Schaffner on the classification of plants—this part covering the algae.

Hawaiian Entomological Society, Proceedings, Vol. IV. and Index.

Natural History, Journal of the American Museum of Natural History, Vol. XXII., No. 3, May-June, 1922. As

usual this Journal is magnificently illustrated. Bird Hunting with a Camera—Scientific Work and Unsettled China—Prize Winning Animal Pictures—Wood Bison of Canada—Miocene Fishes—Workmanship of Leaf Cutting Bee, etc., are among the articles.

Proceedings of Academy of Natural Sciences of Philadelphia, Vol. LXXIII., Part, II.; also Annual Report of Academy in 1921.

University of California Publications on Botany, Vol. 5, Part 17, pp. 457-582, plates 55-85. Apl., 1922.

Inheritance in *Nicotiana Tabacum*. and Vol. VII., Part II., pp. 333-426, plates 32-49, May, 1922. Phyeological Contributions, II to VI.

Smithsonian Miscellaneous Collections:—Cambrian Geology and Palaeontology IV., 7; Notes on Structure of *Neolinus*, with plates A New Dinosaur from New Mexico, with 2 plates; Opinions by International Commission on Zoological Nomenclature.

[End of Vol. 3.]

Australian Ornithologists and Friends at Queensland Museum, October, 1910.



Front Row (read left to right): H. W. Wilson, C. L. Barrett, S. A. White, J. W. Mellor, H. Tryon.
 Second Row: Mrs. White, Mrs. Burrell, Miss Campbell, D. Le Souef, W. T. Pagett, M.L.A. (Minister for Agriculture), A. J. Campbell, Mrs. J. W. Israel, Miss W. Mellor, Miss B. Campbell, Mrs. J. F. Mellor.
 Third Row: Kendall Broadbent, Mrs. Scriven, Prof. S. B. J. Skeritchy, J. R. Sankey, H. Burrell, Dr. W. D. Macgillivray, L. Harrison, (name missing), Charles Barnard, Z. Gray, E. M. Cornwall, L. Bond, J. F. Mellor, W. J. Weatherill, John Bell.
 Back Row: E. G. E. Scriven (Under Secretary for Agriculture), W. J. Wilde, C. Holland, G. H. Barker, W. R. Colledge, Dr. Chenery, D. B. Fry, Dr. J. A. Leach, Captain Cartwright (of the "Endeavour"), J. A. Kershaw, C. Coles, S. S. Stokes, J. O'Neill Brennan, R. Illidge.